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GENERAL REPORT

UPON

THE EXPOSITION

AT

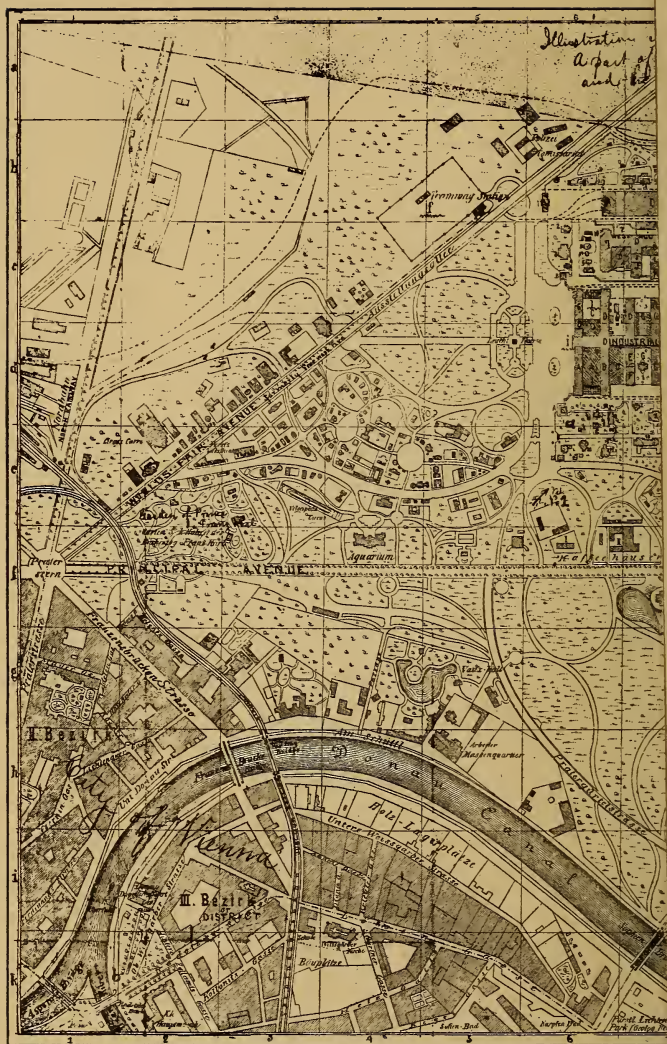
VIENNA.

1873.

BY J. V. MEIGS.

WASHINGTON:
GIBSON BROTHERS, PRINTERS.
1873.

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11214



REFERENCES TO ILLUSTRATION No. 1, MAP OF THE EXHIBITION.

PRINCIPAL BUILDINGS.

<u>a</u> Rotunda and Industrial Palace.	<u>g</u> Principal entrance to Grounds
<u>b</u> Machine Hall.	<u>h</u> Principal entrance to Building.
<u>c</u> Art Exhibition.	<u>i</u> West Entrance.
<u>d</u> Exhibition of Art A.	<u>k</u> East Entrance.
<u>e</u> Animal Exhibition.	<u>l</u> Government Offices.
<u>f</u> Carriage Stand.	<u>m</u> Achmed's Well.

LETTERS DESIGNATING THE EXHIBITING COUNTRIES IN THE MACHINE HALL, IN THE INDUSTRIAL PALACE, IN THE AGRICULTURAL HALLS, AND IN THE ART BUILDINGS.

<u>a</u> United States.	<u>o</u> Germany.
<u>b</u> South America.	<u>p</u> Austria.
<u>c</u> Brazil.	<u>q</u> Hungary.
<u>d</u> England.	<u>r</u> Russia.
<u>e</u> Portugal.	<u>s</u> Greece.
<u>f</u> Spain.	<u>t</u> Romania.
<u>g</u> France.	<u>u</u> Persia and Central Asia.
<u>h</u> Switzerland.	<u>v</u> Turkey.
<u>i</u> Italy.	<u>w</u> Tunis.
<u>k</u> Belgium.	<u>x</u> Morocco.
<u>l</u> Holland.	<u>y</u> Egypt and Africa.
<u>m</u> Denmark.	<u>z</u> Japan.
<u>n</u> Sweden and Norway.	<u>Δ</u> China.

The following is from the Official Map of the World's Fair in Vienna, 1873, corrected and made a little fuller from maps in the British Catalogue, and from my own notes.

The small letters to the left refer to marginal letters at the squares on the sides of the ground plan, and figures next them to those at the squares at the top and bottom of the map. The arrows and figures refer to the illustrations of my report, and show the spot and direction from which they were taken. The small letters in the list refer to corrections made to the drawings.

BUILDINGS IN FRONT OF THE INDUSTRIAL PALACE.

Commencing to number at upper left-hand corner.

Margin No.	Build'g No.	Use and Name of Building.
<u>d</u> 6	1	American Restaurant, Mr. Kune. (misnamed.)

Margin No.	Bui d'g No.	Use and Name of Building.
<i>d</i>	7 2	American Kiosk, (a pavilion for ice-cream and drinks.)
<i>e</i>	6 <i>a</i>	A little Sale Stand for Fans, &c.
<i>d</i>	6 <i>b</i>	Railway Ticket-Brokers' Office.
<i>d</i>	6 <i>c</i>	American Rural School Building.
<i>d</i>	6 <i>d</i>	A Spanish Liquor Agency and Bar.
<i>d</i>	6 <i>e</i>	Spanish Special Exhibition, in charge Don Perez.
<i>d</i>	6 <i>f</i>	Urinal.
<i>e</i>	6 <i>g</i>	Frenchman's Waffle-Baking Enterprise.
<i>e</i>	6 <i>h</i>	Wine Stand.
<i>e</i>	6 <i>i</i>	French Wine and Fruit Stand.
<i>d</i>	7 3	Office of the New Free Press Newspaper, containing a large printing and folding press in operation.
<i>d</i>	7 4	Swiss Buffet, (Von Rouhardt.)
<i>d</i>	7 5	Swedish Restaurant.
<i>d</i>	7 6	Swedish Pavilion, (Finspong productions.)
<i>d</i>	8 7	Exhibition of Swedish War Minister.
<i>d</i>	7 8	Swedish School-house.
<i>d</i>	8 9	Swedish Hunting Pavilion.
<i>d</i>	8 10	Pavilion of Belgian Zinc Company.
<i>d</i>	8 11	Monument of Wasserberger.
<i>e</i>	8 12	Jury Building.
<i>e</i>	7 13	American Soda-Water Hut.
<i>e</i>	7 14	Swiss Musical Instrument House.
<i>e</i>	7 15	Prince of Monaco's Exhibition.
<i>e</i>	7 16	West Engine-house for Western Water-Works.
<i>e</i>	7 17	Male and Female Water-Closets.
<i>e</i>	7 18	Leisinger's Restaurant and Beer-Garden.
<i>e</i>	7 18 <i>a</i>	Münz Pavilion (or) Money-Brokerage House.
<i>e</i>	6 19	Hungarian Shepherd's Cottage, Restaurant, and Wine and Beer-House.
<i>e</i>	6 20, 23	Pilsners Beer Co.'s Restaurant and Beer-House.
<i>e</i>	6 21, 22	Pilsners Private Brewery and Beer-House.
<i>f-e</i>	8 24	Offices of the General Direction.
<i>f-e</i>	9 25	Post, Telegraph, and Custom Offices.
<i>e</i>	9 26	Emperor of Austria's Pavilion.
<i>d</i>	9 27	Lisiani's Hydraulic Cement Pavilion.
<i>d</i>	9 28	Southern Railway Kiosk.
<i>d</i>	9 29	Martin Kien's Portable House.
<i>d</i>	9 30	Chevalier Stark's Glassware Pavilion.
<i>d</i>	9 31	Austrian Savings-Bank Pavilion.
<i>d</i>	9 32	Exhibition of Children's Toys and Nursery Goods.
<i>d</i>	10 33	Metal Industry Pavilion.
<i>e</i>	10 34	Austrian Medicinal Springs.
<i>e</i>	10 35	Trade in Specialties.
<i>d</i>	11 36	Norwegian Garden-House.

Margin No.	Build'g No.	Use and Name of Building.
<i>e</i>	10 37	Post Pavilion.
<i>e</i>	10 38	Pavilion of the Perlmooser Cement Co.
<i>e</i>	10 39	Russian Restaurant.
<i>e</i>	10 40	Water-Closet.
<i>e</i>	9 41	Werner's Gas Apparatus Pavilion.
<i>e</i>	10 42	French Restaurant, Goyard.
<i>e</i>	9 43	Italian Club-House.
<i>f</i>	9 44	Italian Restaurant.
<i>f</i>	9 45	Italian Wine-House.
<i>e</i>	10 46	Styrian Wine-House.
<i>e</i>	10 47	American Wigwam, Beck & Domnat.
<i>e</i>	11 48	Waagner's Glass House.
<i>e</i>	11 49	Strauss' Music Pavilion.
<i>e</i>	11 50	Egyptian Buildings.
<i>e</i>	11 51	Japanese Garden and Buildings.
<i>e</i>	12 52	Restaurant of Arnstein, of Trieste
<i>e</i>	12 53	Iron Furniture Pavilion, Outher & Herzhog.
<i>f</i>	11 54	Gardening and Horticultural Exhibition.
<i>e</i>	11 55	Persian Villa.
<i>e</i>	12 56	Turkish Buildings.
<i>d</i>	11 57	Circle Oriental, by Dr. Hardt.
<i>d</i>	12 58	Light-House Maritime Board of Austria.
<i>d</i>	11 59	Austrian Lloyds Ship-Docks, &c.
<i>d</i>	10 60	Russian Dwelling-House.
<i>d</i>	10 61	Reiners Russian Pavilion.
<i>d</i>	10 62	Wood Ware, Austellung
<i>e</i>	10 63	Austrian Marine Pavilion.

BETWEEN THE CROSS GALLERIES OF THE INDUSTRIAL PALACE.

<i>d</i>	7 1	Pavilion of the Commercial Society.
<i>d</i>	7 2	Swiss Commission and Swiss Carvings.
<i>d</i>	7 3	Belgian Commission House.
<i>d</i>	7 3 <i>d</i>	Model, Mont Cenis Tunnel, and Italian Yard.
<i>d</i>	8 4	Dutch Wood Ware and Ecclesiastic Art.
<i>d</i>	8 5	Telegraph House.
<i>d</i>	8 6	German. Not built.
<i>e</i>	8 7	German Commission House.
<i>e</i>	9 8	German Emperor's Pavilion.
<i>d</i>	8 9	Not built, but a ticket office for elevators stood within the court.
<i>d</i>	9 10	Iron Garden Kiosk.
<i>d</i>	10 12	House for Hungarian Commission.
<i>d</i>	10 13	Russian Minister of War's Exhibition.
<i>d</i>	10 14	Turkish Treasure, Jewels, &c.

BETWEEN THE MACHINE-HALL AND INDUSTRIAL PALACE.

Margin	No.	Build'g No.	Use and Name of Building.
<i>c</i>	6	1	Western Entree, No. 5.
<i>c</i>	6	2	American Restaurant and English Bar, (attended by women.)
<i>c</i>	6	3	Bakery of Roman Uhl.
<i>c</i>	6	4	Dow and Clark's Soda Water Kiosk.
<i>c</i>	6	5	Cook's Tourist Office.
<i>c</i>	6	6	English Commission House.
<i>c</i>	6	7	Western Agricultural Hall.
<i>b</i>	7	8	Water-Closet.
<i>b</i>	7	9	Restaurant. (Not built.)
<i>c</i>	6	10	Norwegian Exhibition. Fishing and Boat Im- plements.
<i>c</i>	8	11	Laplander's Hut.
<i>c</i>	7	12	Swedish Exhibition of Fish, Nets, Boats, &c.
<i>c</i>	8	13	German School Apparatus and School Exhibits.
<i>c</i>	8	14 <i>a-b</i>	German Mining, Metal, and other Industries.
<i>c</i>	8	14 <i>c</i>	Krupp's Cast-Steel and Iron Manufactures.
<i>c</i>	8	15	Maximilian Monument.
<i>c</i>	9	16	Dreher's Beer-Tasting Hall.
<i>c</i>	9	17	Pavilion of the Duke Saxe-Coburg Gotha.
<i>c</i>	9	18	Prince Adolf v. Schwarzemberg.
<i>c</i>	9	19	Collective Ausstellung of Monthner's Sons.
<i>c</i>	9	20	Wagner's Sample Iron Work, Stable, &c.
<i>c</i>	9	22	Chailly's Artificial-Stone House.
<i>c</i>	10	23	Prayné Iron Manufacturing Co.'s Pavilion.
<i>c</i>	9	24	Vordenberg-Koflacher Mining Co.'s Pavilion.
<i>c</i>	10	25	Innerberger Shareholders Mining Co.'s Pavilion.
<i>c</i>	10	26	Corinthian Mining Industry Societies' Pavilion.
<i>c</i>	10	28	Shareholders' Brewery.
<i>c</i>	9	29	Mr. Bosch's Pavilion, "Asphalt Production."
<i>c</i>	10	31	Mr. Stephen's Pavilion, "Machine."
<i>c</i>	10	32	Withowitz Railway Bridge.
<i>c</i>	10	33	Baron Rothchild's Pavilion.
<i>c</i>	10	34	Johan Liebig and Co.'s Pavilion.
<i>c</i>	10	35	Paget's Pavilion of New Inventions.
<i>c</i>	10	36	Hofrath-Klacko's Asphalt Sidewalk.
<i>c</i>	10	37	Jno. Schuberth's Pavilion.
<i>c</i>	10	38	Steiner's Tyrolese House.
<i>c</i>	10	39	Pavilion of the Shareholders Company for the Construction of Bridges and Roads.
<i>c</i>	10	40	K. K. States Railway Co.'s Building.
<i>c</i>	10	41	Pavilion for the representation of the History of Inventions in Women's Work.
<i>c</i>	10	42	A Mining Co.'s Pavilion.

Margin No.	Build'g No.	Use and Name of Building.
c 10	43	Egyptian Restaurant.
c 11	44	Danube Steamship Companies' Pavilion.
c 10	45	Alsatian Collective Exhibition and Alsace-Lothringen Restaurant.
c 10	46	Austrian Agricultural Minister's Pavilion.
c 11	47	International Wine and Lunch-Room—a long room, filled on each side of an aisle with lunch and wine counters of many nationalities.
c 11	48	Eastern Agricultural Hall.
c 12	49	Water-Closet.
c 6	50	Water-Stand. High iron column, with tank on its top. (See bird's-eye view.)
c 6	51	Porter & Aveling's Steam Road Carriage Office.
	21 and 27	were never built.

BEHIND THE MACHINE HALL.

b 6	1	Carl Heilfringer's Bakery.
b 6	2	Machine-House for Western Water-Works.
b 6	3	Water-Closets.
b 6	4	American Boiler House.
b 7	7	English Gas Factory.
b 7	9	Steam Machinery Building.
b 7	11	Brick Machinery.
b 6	12	Windmill.
b 7	13	English Workmen's House.
b 7	14	English Boiler-House.
b 7	15	French Boiler-House.
b 7	16	Tommasi's Pavilion Machinery.
b 8	19	Machine Workshops for Austria.
b 8	20	Simmering Hammersmith Co.'s Exhibition.
b 8	21	Water-Closets.
b 8	22	Belgian Boiler-House.
b 8	23	Pavilion of the Trade of the World.
b 8	24	Exhibition Railway House.
b 9	25	German Boiler-House.
b 9	26	Pavilion for German Iron and Brick Machinery.
b 9	27	Austrian Boiler-House.
b 9	28	Jacob Munk & Co.'s Machine Pavilion.
b 10	29	North Railway Pavilion.
b 10	30	Northwest Railway Pavilion.
b 10	31	Machine-House Pumping-Engine.
b 10	32	Pavilion for Water-Works.
b 7	33	Swiss Boiler-House.
b 9	34	Water-Closets.
b 9	35	Baron Doblhoff's Brick Works.
b 9	36	The Freund Brothers' Pavilion, (Brick Makers.)
b 9	37	Stainzer's Slate Works.
b 9	38	Stalling, Zeim & Co.'s Roof Paper.

THE DIVISION BEYOND THE HENSTADL WATER.

Margin No.	Build'g No.	Use and Name of Building.
<i>c</i> 13	1	Place for Forest Productions.
<i>c</i> 12	2	Krian Sacher's Restaurant.
<i>c</i> 13	3	Forest Industry Stock Companies' Exhibit.
<i>c</i> 13	4	Prince Albrecht's Pavilion of Land and Forest Husbandry.
<i>c</i> 13	5	Collective Exhibition of Styrian Forest Proprietors.
<i>c</i> 13	6	Russian Peasant House.
<i>c</i> 12	7	Pump-House.
<i>c</i> 12	8	Iron Church, by Hemming & Co.
<i>c</i> 13	9	Pavilion of the K. K. Hungarian Forest Department.
<i>c</i> 13	10	Swedish Dairy.
<i>c</i> 13	11	Mr. Ganahl's Farm-House in Feldkirchen.
<i>c</i> 13	12	Hungarian Farm-Houses—Hungarian Saxon, <i>a</i> . Geydeler, <i>b</i> . Roumanian, <i>c</i> ; Sczekler, <i>d</i> ; Grenzer, <i>e</i> . Croats, <i>f</i> .
<i>d</i> 13	13	Austrian School-House.
<i>d</i> 12	14	Gymnasium.
<i>d</i> 13	15	Baron Pittel's Stable.
<i>d</i> 12	16	Pavilion for Glass Manufacture.
<i>d</i> 13	17	Laborer's House of Beton.
<i>d</i> 13	18	Alpine Hut of Upper Austria.
<i>d</i> 13	19	Water-Closet.
<i>d</i> 13	20	Chevalier Mlodechy's Farm-House.
<i>d</i> 13	21	Walneker Alpine Hut.
<i>d</i> 13	22	Dairy of the Agricultural Society of Vienna.
<i>d</i> 13	22	Sanitary Exhibition.
<i>d</i> 12	23	Vienna Photographic Association.
<i>e</i> 13	24	Military House.
<i>e</i> 13	25	Military Barracks.

NOTE.—The "Principal Avenue" was a very wide one, with rows of trees on the side of the carriage-way. On both sides of the street there was a footway next the trees, and on one, a way for horsemen.

In the afternoons immense numbers of people promenaded up and down this avenue, looking at the "teams" on the road and listening to the splendid bands of the coffee-houses, I, II, and III, where supper is taken, always spending a long time over cups of beer and the newspapers.

WASHINGTON, D. C.,

May 28, 1874.

To the President of the United States:

With the notification of my appointment to attend the Vienna Exposition of 1873 as a "practical artisan," I received from the Secretary of State instructions to report, A brief general survey of the Exposition; The character and condition of the American exhibition, and my doings and observations.

This general survey is herewith submitted, and it will be followed, as soon as practicable, by a special report upon Subdivisions of Group XVI, the "Art of War."

You will probably be willing to overlook the imperfection of these attempts of mine when you learn that the Austrian Commission, to whom the subject of my special report was assigned, complain bitterly of the difficulties under which even *they* labored in obtaining information. While the value, as they say, of a report upon military objects consists in accurate measurements and numbers, they found it impossible to attain this accuracy, because they found the objects of their search locked in cases, the exhibitors absent, and their agents imperfectly informed. Add to these impediments my ignorance of German, and the impossibility, for want of funds, of obtaining the services of draughtsmen and interpreters, and you will be prepared to excuse my shortcomings in the premises.

Respectfully,

JOE V. MEIGS.

VIENNA EXHIBITION, 1873.

BRIEF GENERAL SURVEY OF THE EXPOSITION.

This magnificent exhibition was held under the patronage of the Emperor of Austria, having for its aim to represent the present state of modern civilization, the entire sphere of national economy, and to promote their further development and progress; and was, for its object, a great success.

It was organized under the "protection" of Archduke Charles Lewis, the Presidency of an excellent and unassuming gentleman, Archduke Regnier, and the Vice-Presidency of a great number of the ablest persons in Austria and of Europe, these constituting an Imperial Commission, with Baron de Schwarz-Senborn as manager.

Baron Schwarz acquitted himself most creditably in his difficult and arduous duties, beset as he was by a multitude of complainers, as well as by the real difficulties which arose. Many complaints were made of him by Americans; but as far as I could see, it seemed to me that the whole arose from a want of proper organization in the American division itself.

The exhibition took place in grand and imposing buildings erected upon the central part of one of the most glorious old parks in the whole world, "The Prater." It lies on the northeastern outskirts of the city of Vienna, on a part of an island formed by the encircling Danube canal and river. This ancient park is naturally a most beautiful piece of ground. In certain parts it is almost a plain surface, filled with groups of stately forest trees, through which are roads, paths, and "*allees*," or drives.

A part of the city of Vienna lies on this island, and one of its great streets, the Prater-Strasse, leads to the Prater. The Praterstern is a sort of square at the head of this street, from which several streets radiate; two of them are the great avenues of the Prater, the Austellung Allee, or Exhibition avenue, and the "Haupt Allee," or principal avenue. Between them, and nearest the city, lie nestled among the

stately trees the famous places which have, in part, given the Viennese their name for gaiety and life.

Here are restaurants, beer-gardens, beer-halls, theatres, small shows of all kinds, such as carousels, Punch-and-Judy shows, shooting-galleries, velocipede-rinks, swings, out-of-door athletes, street theatres, monstrosity shows, and in fact, every conceivable amusement for father, mother, and children.

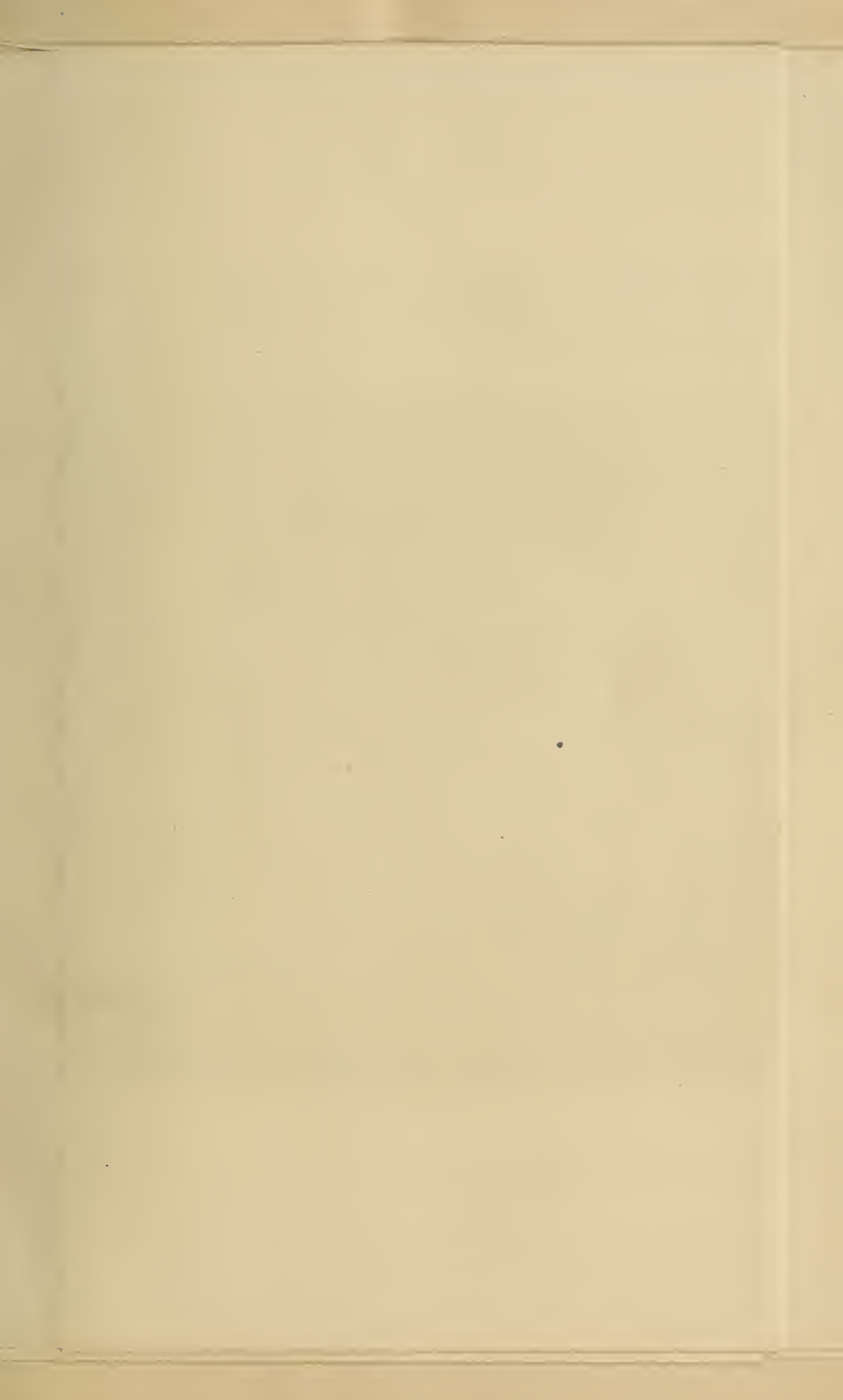
[See Illustration No. 1, between squares C and E and 1 and 5.]

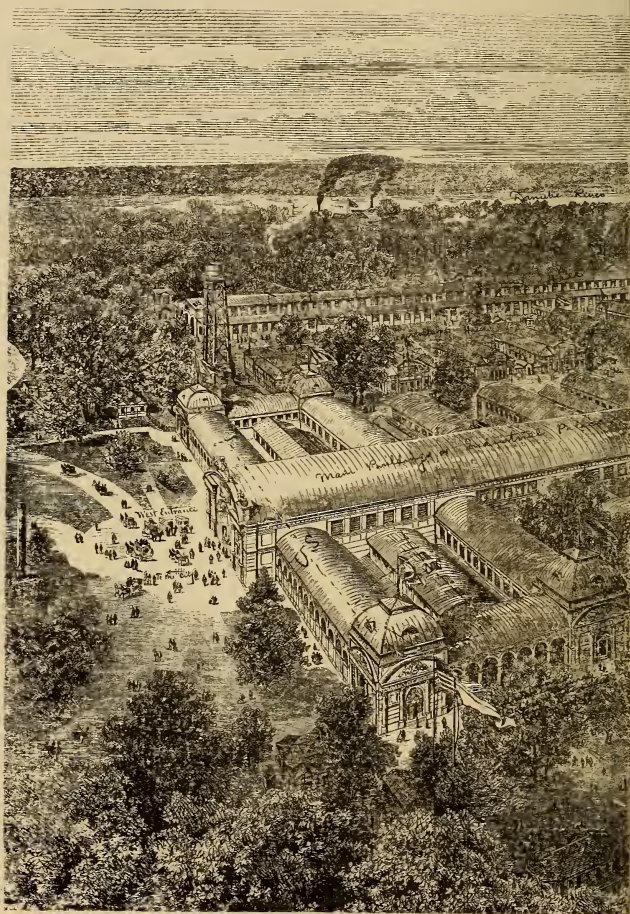
These places are all thrown open on Sunday and on holidays, and are filled with those for whom they are intended. The Viennese father seldom goes to amuse himself without his wife, children, and friends, and their presence is the great reason why so little drunkenness is seen among them, notwithstanding everybody drinks. Beer and wine, and even the stronger liquors are much used. It was really amusing to see how easily the Americans of all *professions* fell into the Sunday habits of the Viennese, how quickly the water of Vienna was condemned as unhealthy and unfit to drink, and beer praised and used instead.

Beyond this village of innocent amusement places, a neat and somewhat ornamental fence was constructed, enclosing about fifty acres of this old park, partly wooded. It was laid out in a very beautiful manner, reserving in its natural state all that could be, presenting the finest effect.

The gardening displayed in these grounds was singularly beautiful and successful. Nowhere in Europe was it excelled. That around our public buildings is paltry in comparison. The beauty, taste, and perfect neatness of the grounds surrounding the Exhibition, in the public parks, or about the private places in the vicinity of Vienna, would be difficult indeed to surpass. The symmetrical beds of flowers, placed here and there in the well-watered and closely-clipped blue-grass plats which lay between the walks and avenues, the tasty grass guards preventing pedestrians from over-stepping the walks, the beautiful and often fragrant and delicate blooming flowers, mixed with colored border plants, climbing and trailing vines twining the posts of the architectural-covered walks that led from the main entrance of the grounds on the Haupt-Allee to points opposite the central transepts on either side of the grand entrance to the rotunda of the main building, all combined to please even the most fastidious.

The clumps of fragrant flowers, well-placed evergreens, and the natural forest trees, statuary, fountains, and pools,





Birds Eye View



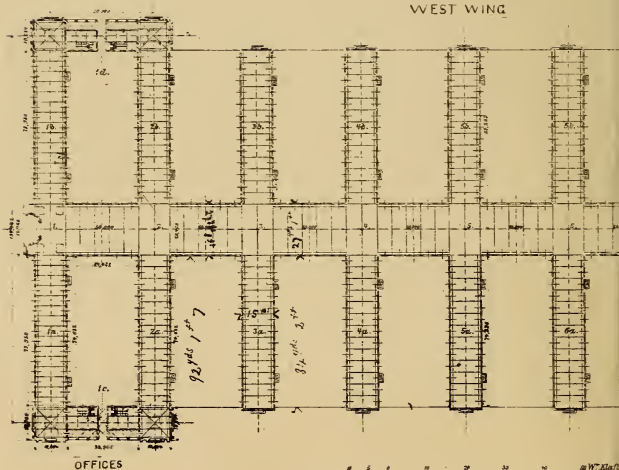
Birds Eye View of Vienna Exhibition Buildings, by L. E. Petrovitch.



End-Pavillon.
END PAVILLION

989 vda 2.27

Westlicher Flügel
WEST WING



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VIENNA

Architectural elevation of the Palazzo di San Marco in Venice, showing the facade with the central dome and various windows and arches. The drawing is signed "E. L. Pavillon" on the right.



Multiply integers by 3.181603^{off}

To reduce to 1 bit.

And find the number of multiplications & time for binary operations, like subtraction. The more bits there are, so if I double it, for

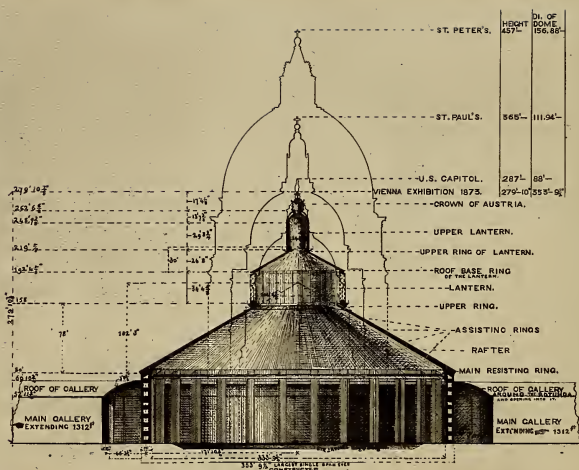


No. 4.

The MAIN ENTRANCE and ROTUNDA, from either side of which leads, both right and left, the main gallery of the Industrial Palace.

The beautiful grounds and general elegance must be noticeable.

The supporting girders of the roof of the Rotunda and their strengthening rings, as well as the abutting rings, are clearly shown. (See also the engraving, Illustration No. 2.)



No. 3.

Cross section through the rotunda shows the positions of the columns, (see Illustration No. 3 for plans,) the girders and resisting ring, the lantern, and an outline comparison with the greatest domes of the world, both in height and width.

lent the place an air of freshness and beauty that was most pleasing to the cultivated eye, and delightful to all. (See illustration No. 2.)

The buildings were not of the cheap order so common for such temporary purposes. They were substantial, elegant, and highly ornamental, wearing an air of permanency so real that one could scarcely believe that they were all, with the exception of the rotunda, to be removed. (See illustration No. 3.)

THE MAIN BUILDING.

This was a long gallery or parallelogram, 27 yards and 1 foot wide, and 989 yards and 2 feet long, intersected on both sides by 16 transverse galleries, which were 15 yards wide and 84 yards and 2 feet long; the two end transepts, however, and two at the middle, on each side of the rotunda, were a little longer, or 92 yards 1 foot and 7 inches long and 15 yards wide. These were connected at their extremities by galleries running parallel to the main building, relieving the appearance of the structure and making room for many offices and conveniences. (See illustration No. 4.)

THE ROTUNDA.

The Rotunda divided the main building in halves, and was surrounded by the square formed by the two transepts next it and their connecting ends.

It is the greatest architectural achievement of modern times. More than twice as large in span as the greatest dome ever before constructed, it is without truss, girder, central supporting columns, or tie-rods. It is constructed entirely of plates of such iron as boilers and tanks are made of, and such knees or angle-irons as are used to connect them, and riveted together in the same way.

These plates are from three-eighths inch to one-half inch thick.

An immense hollow box, or ring, 117 yards 2 feet and $9\frac{1}{2}$ inches in diameter, resists the outward thrust of girders abutting it; thus, by the simplest possible means, an immense space is roofed without truss, rod, girder, or column.

This ring rested upon stuccoed columns. They were 80 feet high, and about 10 by six feet square; thirty-one in number. (See illustration No. 5.)

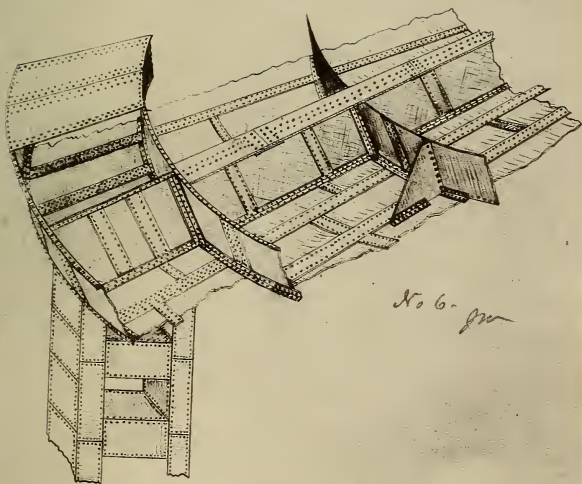
Eight of these were arranged in pairs, so as to make room in and between them for elevators and stairways leading to a balcony at the cornice of the inside, and to the roof and

lanterns outside. Thirty rafters, 131 feet long, 5 feet deep at the lower end and $2\frac{1}{2}$ feet at the other, made of sheet-iron half-inch thick, with a flange at top of about a foot in width, abutted on the inside of the ring, and, instead of running to an apex, were connected by a similar ring at their upper ends. They stood at such an angle as to rise 78 feet. The upper ring had an opening 95 feet $8\frac{1}{2}$ inches, and was the base of a large lantern or tower, on the top of which was a similar roof, in turn supporting an upper lantern, which was surmounted by a huge Austrian crown, 17 feet and $4\frac{1}{8}$ inches high. (See illustration No. 3.)

These rafters being designed sufficiently strong to support themselves and their proportional part of the weight of the superincumbent lanterns, if the structure were to fall, the thrust of the girders being outward, they must burst the huge ring first mentioned or crush the upper one. But, as if to secure it doubly, at four equidistant points these rafters were strengthened by other rings, but, like the rafters, of a single thickness of metal. This frame-work was sheathed on the under side with sheet-iron, and this was the whole structure. It can be shown how this form of structure might be applied to square buildings; and thus a room of any size can be easily covered without post, abutting walls, or tie-rods. It was the work of the "English architect," Mr. Scott Russell. (See illustration No. 6.)

The main galleries were, at the walls, about 41 feet high, and were surmounted by arched truss roofing. They were built of brick and wood, all of which was stuccoed in the inimitable Viennese style—on the outside in imitation of block stone wall, relieved by ornamented sunken panels; on the inside the walls of all the galleries were for about two-thirds of their height blank, for the purpose of giving show-room. These walls, on the outside, were surmounted by pilasters, arranged in pairs, about twenty-two feet apart. They supported a cornice, upon which rested the roof. Between the pilasters, reaching from the top of the blank wall to the under side of the cornice, next the roof, were the windows which lit the interior. (See illustration No. 3.)

The transepts were the same exteriorly, and at their ends were elegantly stuccoed in a composite order, with four Corinthian columns supporting a cornice, and arranged in pairs on either side of an immense glass door, which had in it a smaller door, which was constantly used. Between these columns



No. 6.

Illustration showing details of construction of girders and abutting rings of Rotunda.



No. 7.

This beautiful view is taken from the southwestern corner of the Art Building, and shows the Main Entrance portal, the northeastern transept and its end pavilion, and Achmed's Well, together with the pools lying between the Industrial Palaces and the Art Buildings. (See-Illustration No. 1, squares *d-11*.)



No. 8.

This view is of a part of an Italian transept, and shows something of the mode of the construction of the building, how lit, the roof, the mode of giving depth to the pilasters to support the roof without obstructing the light, as well as some of the beautiful exhibits from that country.

were niches, in which were placed allegorical figures, and in the pediments, which were curved in conformity to the roof, were graceful figures in the same material—the Viennese stucco.

This stucco has a soft brown color, and withstands the action of the weather, and is cheap in its first cost. It will be specially reported upon by a member of the Artisan Committee.

The connections between the end transepts and those next the rotunda were of a very elegant design, being a colonnade of Corinthian columns, supporting arches reaching from one to the other, surmounted by a rich cornice with highly ornamented frieze. The spaces between the arches were filled with figures representing the arts, &c., and were of no mean order, either in design or execution. They were not of one pattern, but were of different design, and were yet symmetrical. (See illustration No. 7.)

The main entrances were of a similar general design, and all were most beautiful specimens of stucco work, showing how elegant and elaborate effects, bold and delicate, rich in detail, and very permanent, can be produced quickly and cheaply.

If these entrances had been made of stone, they would have cost as much as the whole structure. This ornamental stucco is as well adapted for inside as for outside use. The inside of the galleries were all finished alike, in the same material; the walls to be covered by exhibits were left plain. The floor was a plain wooden one, $\frac{1}{4}$ -inch cracks being left between the planks, thus preventing the accumulation of dust. (See illustration No. 8.)

From the side walls stood deep pilasters, surmounted by a cornice and supporting Corinthian columns, made of wood brought to form by stucco. These columns supported a bold cornice with a highly ornamented frieze. The columns were tied by braces and tie-rods to the pilasters between the windows, and thus depth of pilaster and column was given sufficient to support the arched truss of the roof, relieving the inside of the galleries by their graceful and novel appearance, free from the heaviness and monotony which the deep pilasters would have made had they run up to the roof, besides permitting the passage of light. The thirty-one immense columns, which supported the roof of the rotunda, were relieved by panelled pilasters, which were elegantly ornamented by elaborate designs in relief in stucco, the whole building presenting the most magnificent appearance.

With but one or two exceptions, all of the space left between the transepts was covered over and used, thus more than doubling the room. This is not shown in the general plan No. 3, but is shown in the plan of illustration No. 1. (See illustrations Nos. 9 and 10.)

The buildings for the exhibition of art, the Emperor's building, (see Illustration 9, Emperor's Pavilion,) and the Jury building were built of the same material and stuccoed, and presented a fine architectural effect. Besides these, there were numerous other buildings of a more temporary appearance and nature, but well designed and appointed for the purpose. Of this same nature of construction, private persons erected pavilions for their own exhibits.

Buildings were also erected by contributing Governments to show some specialty of their people, such as peasants' huts from Russia, Sweden, Hungary; Alpine, &c., huts, illustrative of soldiers' frontier life; school-houses, fishery structures, stables, farm-houses, mosques, Egyptian, Persian, and Japanese buildings and gardens.

There were, in all, one hundred and thirty-nine (139) out-buildings, all of which were filled with goods of some kind. If the whole of the exhibits had been placed on both sides of an aisle, so as to have given five and one-half feet on each side of it, it would have extended thirty-nine miles, an unbroken show of progress, industry, refinement, elegance, thrift, virtue, and love, the history of which will be an enduring monument to the wonderful management of the officers of the Exhibition, and especially to the director, Baron Schwarz. (See illustrations Nos. 11 and 12.)

THE PROGRAMME

was followed out fully.

It consisted of a division of the exhibits into twenty-six groups, a preamble of the object of the Exhibition and the object of special parts of it, the formation of the juries, and their awards.

To make this general view as concise as possible, I will pursue it by its organization. There were seven prizes awarded:

1. A medal for *Fine Arts*.
2. A medal to exhibitors in other Exhibitions, *for progress made*.
3. A medal for exhibitors for the first time, for *National, Economical, or Technical Merit*.
4. A Medal for "*Productions* fulfilling all the conditions of refined *taste* in color or form."



No. 9.

This most beautiful building is a sample of the best kind of stucco work; it was built of wood and brick; the columns and cornice of the portico are made of wood, and brought to form by stucco; the ornamentation is made in the same way and of the same material; the roof slate.

It contained a reception-room or two, and some private rooms, as well as kitchen, dining-room, &c. (See Illustration No. 1, squares e-8, building No. 26.)



No. 10.

No. 1. d 11 and 12, building d.

This building was constructed in the same manner and of the same material as the Emperor's Pavilion.



No. 11.

See Illustration No. 1, c-11, building 51. Direction of view shown by arrow, "View No. 12."

The queer cane fence, and general disposition of the pools, stone and clay figures, and other ornaments, gave this place a most interesting appearance. The taste displayed in these garden buildings was well worth study and report; but the Artisan and Scientific Committee, being without funds, could not undertake such specialties. The necessary drawings and illustrations to accompany such a report would have cost more than the combined Commission could have spared from their pittance.



No. 12.

See plan, illustration No. 1, *c-11*, buildings No. 50 and 51, Japanese Garden and edifices, showing something of these structures and the beauty of the grounds, and a sample or two of such trees as filled the Prater.

5. *A Diploma of Merit*, an honorable mention.

6. *Assistant and Workman's Medal* for those who had been notably connected with a rewarded object.

7. *Diplomas of Honor* to the individuals or corporations who had promoted *Education, Development of Industry, National Economy, or Intellectual or Material Welfare* of the Working Classes.

It will be noticed that these medals and diplomas have no greater value one than the other; that they are rewards of specialties of things and persons; that two objects could receive the same prize, not for equal but for special value and merit, though one might be the superior of the other.

This feature was diplomatic and politic, but the awards made under it are not at all an index of the value of the article.

It was politic, inasmuch as everybody could get a prize, and Austria was not thrown in competition, though she need not have feared it. A number of exhibitors in competition with articles of different value, some much inferior to others, could, and did, receive prizes of equal value, and in some cases of the same name. Thus every exhibitor, with an article of reasonable merit, was sure to get a prize if he could get the attention of the jury.

The jury was composed of members from all parts of the world, creditable enough, but, acting under the programme, their awards were merely complimentary; so that any gentleman of average intelligence would make a good juror.

The General Direction for the Exhibition classified it into groups, sections, and jury divisions, as follows:

CLASSIFICATION AND DIVISIONS.

GROUP 1.—*Mining, Quarrying, and Metallurgy.*

- | | |
|---|--|
| <i>a</i> Mineral fuels, (coals, shales, and mineral oils:) | <i>f</i> Geological works and geological maps, etc.; |
| <i>b</i> Mineral ores and metals: | <i>g</i> Tools and inventions for mining and metallurgy, for underground and surface work: |
| <i>c</i> Other minerals, (as salt, sulphur, graphite, etc.,) not including building materials: vide Group 18; | <i>h</i> Statistics of production. |
| <i>d</i> Natural alloys; | |
| <i>e</i> Drawings and models of objects relating to mining, metallurgy, and mineral industry; mining, engineering, surveying, and map-making; | |

Sections for the Juries.

- Section 1. Mining.
 Section 2. Iron works.
 Section 3. Other kinds of metallurgy.

GROUP 2.—*Agriculture, Horticulture, and Forestry.*

- a* Plants for food and physic, (excluding fresh fruits and vegetables which are to be the subject of temporary exhibitions;)
- b* Tobacco and other narcotic plants;
- c* Vegetable fibre, (as cotton, flax, hemp, jute, china-grass, etc.,) and other plants of commerce in their raw state;
- d* Cocoons of silk worms;
- e* Animal products in a raw state, (skins, hides, feathers, bristles, etc;)
- f* Wool;
- g* Products of forestry, (timber, wood for cabinet-work, tanning substances, resin in a raw state, dyeing woods, barks, charcoal tinder;)
- h* Peat and its products;
- i* Manures;
- k* Drawings and models of objects used in agriculture, horticulture and forestry; farm maps;
- l* Works of the experimental stations. Woodland and forest doom-books. Statics of forests, etc.;
- m* Processes and inventions for producing, transporting, and storing the above-mentioned products;
- n* Plans of gardens, drawings and models of horticultural implements, hot-houses, conservatories, irrigation, etc.;
- o* New methods of horticultural cultivation;
- p* Statistics of production.
(Vide Temporary Exhibitions No. 4.)

Sections for the Juries.

- Section 1. Agriculture.
- Section 2. Animal products.
- Section 3. Forestry.
- Section 4. Cultivation of the vine, fruit, vegetables, and horticulture.

GROUP 3.—*Chemical Industry.*

- a* Chemical products for technical and pharmaceutical purposes, (acids, salts, chemical preparations of all sorts;)
- b* Raw substances and products of pharmacy, mineral waters, etc.;
- c* Fats and their products, (stearine, oil acids, glycerine, soaps, candles and tapers, etc. ;)
- d* Products of dry distillation, (as refined petroleum, slate oil, paraffine, phenylic acid, benzoïne, anilin, etc;)
- e* Etherial oils and perfumeries;
- f* Matches, etc;
- g* Dye stuffs, mineral and organic;
- h* Resins, (washed, dyed or bleached,) sealing-wax, varnish, albumin, isinglass, glue, starches, dextrin, etc;
- i* Contrivances and processes used in chemical production;
- k* Statistics of production.

Sections for the Juries.

- Section 1. Chemical products for technical purposes.
- Section 2. Pharmaceutical preparations; etherial oils; perfumeries, drugs and other raw products for pharmacy and chemical industry.
- Section 3. Fat industry.
- Section 4. Products of dry distillation.
- Section 5. Explosive materials; dye stuffs; varnishes and other products of chemical industry.

GROUP 4.—*Substances of Food as Products of Industry.*

- a* Flour and other farinaceous products, malt and its products;
- b* Sugar and its products;
- c* Spirits and spirituous liquors, etc.;
- d* Wines;
- e* Ale, beer, porter, etc.;
- f* Vinegars;
- g* Preserves and extracts, (extracts of meat, portable soup, condensed milk, Erbswurst, preserved vegetables, preserved meat, etc.;)
- h* Tobacco and similar manufactures;
- i* Confectionery, ginger-bread, chocolate, coffee-substitutes, etc.;
- k* Processes and inventions for preparing all these articles;
- l* Statistics of production.

GROUP 4.—Continued.

Sections for the Juries.

Section 1. Flour and other farinaceous products.

Section 2. Sugar, confectionery, and chocolate.

Section 3. Wine and its substitutes;

beer and other fermented liquors and vinegar.

Section 4. Preserves, extracts, and meats.

Section 5. Tobacco manufactures.

GROUP 5.—*Textile Industry and Clothing.*

a Washed wool and hair used for textile fabrics, carded wool and worsted, combed wool and woollen fabrics, felt, carpets, blankets, hair tissues, mixed fabrics, including shawls;

b Cotton, cotton substitutes, cotton thread, cotton fabrics and cords;

c Flax, hemp, jute, and other fibres; yarns, threads, and fabrics of the same; straw fabrics for bonnets, screens, and mats, webs and cords of reed, cane, bast, hair, wire, etc.;

d Raw silk: spun silk and manufactures of silk, silk wastes;

e Small-ware manufactures, gold and silver cloths and embroideries;

f Lace;

g Hosiery, milled and unmilled;

h Finished objects of clothing, (clothes, gowns, hats, bonnets, shoes and boots, gloves and linen, etc.);

i Upholstery, carpeting, curtains, bed-furniture, etc.;

k Artificial flowers and feather ornaments;

l Processes and inventions used in the production of these manufactures;

m Statistics of production.

Sections for the Juries.

Section 1. Woollen fabrics.

Section 2. Cotton fabrics.

Section 3. Linen fabrics.

Section 4. Silk fabrics.

Section 5. Fringe work: gold and silver webs: lace and loose-woven fabrics; embroideries; ornamental feathers, and artificial flowers made of various kinds of stuffs—paper, leather, &c.

Section 6. Linen; articles of clothing, fur, hats and bonnets, gloves.

Section 7. Shoe and bootmakers' articles.

Section 8. Upholstery.

GROUP 6.—*Leather and India Rubber Industry.*

a Leather; articles of leather, harness, saddles, trunks, and other leather goods, excluding clothing and fancy goods; parchment and gold-beater skin;

b Skins and furs;

c India rubber and gutta-percha articles; excluding philosophical and mechanical instruments and parts of machinery: waterproof stuffs and cloths;

d Processes and inventions used in the production of these manufactures;

e Statistics of production.

Sections for the Juries.

Section 1. Leather and rough skins.

Section 2. Leather wares.

Section 3. India-rubber and gutta-percha wares.

GROUP 7.—*Metal Industry.*

a Goldsmiths' and silversmiths' work and jewelry, etc.;

b Iron and steel wares, excluding machinery, building materials, philosophical and musical instruments;

c Manufactures from other metals and alloys;

d Weapons of every description except military arms;

e Processes and inventions used in

the production of these manufactures;

f Statistics of production.

Sections for the Juries.

Section 1. Gold and silver wares and jewelry.

Section 2. Iron and steel wares.

Section 3. Arms, with the exception of war armature.

Section 4. Other kinds of metal wares.

GROUP 8.—*Wood Industry.*

- a* Cabinet work, (inlaid floors, windows, doors, etc.)
- b* Joiners' work;
- c* Cleft wood-work, (casks, shingles, sieves, etc.)
- d* Small staves and their products, matches, etc.:
- e* Veneers and marqueteries:
- f* Cut and turned wood;
- g* Chisel work and carved work:
- h* Cork manufactures:
- i* Basket work;
- k* Wood-work, painted, stained, and gilt:
- l* Processes and inventions used in the production of these manufactures:
- m* Statistics of manufactures.

Sections for the Juries.

- Section 1. Carpenters' and cabinet work: veneers; cut, turned, chisel, and carved work.
- Section 2. Productions of cleft wood-work: cork manufactures, and basket wicker-work.
- Section 3. Colored, painted, stained, and gilded wood-work.

GROUP 9.—*Stone, Earthenware, and Glass Industry.*

- a* Stones, natural and artificial; slate and cement works, (natural and imitated stones and marbles, paving stones and floor tiles, ornaments and decorations, pipes, grinding-stones, etc.)
- b* Earthenware, (pipes, cooking vessels, stoves, plastic reproductions, terra-cottas, etc.)
- c* Glass manufactures, (glass for household use and fancy purposes, imitation gems and pearls unset, etc.)
- d* Processes and manufactures used in the production of the above articles, etc.:
- e* Statistics of production.

Sections for the Juries.

- Section 1. Stone and cement wares.
- Section 2. Earthenware.
- Section 3. Glass-wares.

GROUP 10.—*Small Ware and Fancy Goods.*

- a* Manufactures of ivory, meerschäum, tortoiseshell, mother-of-pearl, whalebone, wax wares, japanned goods:
- b* Fancy goods of leather, bronze, etc.:
- c* Umbrellas, parasols, fans, canes, whips, etc.:
- d* Combs and brushes:
- e* Toys:
- f* Processes and inventions used in the production of these manufactures:
- g* Statistics of production.

Sections for the Juries.

- Section 1. Manufactures of meerschäum, tortoiseshell, horn, bone, ivory, mother-of-pearl, whalebone, etc.
- Section 2. Toys and wax works.
- Section 3. Small-ware and fancy goods of leather and bronze, lacquered work.
- Section 4. Canes, whips, umbrellas, and parasols.

GROUP 11.—*Paper Industry and Stationery.*

- a* Paper pulp, paper and pasteboard:
- b* Colored papers, paper-hangings, tapestry, playing cards, etc.:
- c* Papier-mache goods, card, mill-board:
- d* Articles for writing, drawing, and painting:
- e* Bookbinding and similar work:
- f* Processes and manufactures used in the production of the above manufactures:
- g* Statistics of production.

Sections for the Juries.

- Section 1. Paper-wares, pasteboard, and paper.
- Section 2. Colored paper, paper-hangings, playing cards, cartoon paper.
- Section 3. Writing and drawing paper, and painters' requisites.
- Section 4. Bookbinders', portfolio, and papier-mache goods.

GROUP 12.—*Graphic Arts and Industrial Drawing.*

- a* Book printing;
- b* Xylography;
- c* Copper-plate and steel printing;
- d* Lithography and chromolithography;
- e* Photography;
- f* Engraving and guilloche work;
- g* Pattern drawing and drawing for decoration;
- h* Tools and apparatus;
- i* Statistics of production.

Sections for the Juries.

- Section 1. Book, copper, steel-plate, and music printing; lithography, chromography.
- Section 2. Engraving and guilloche work, xylography.
- Section 3. Photography.
- Section 4. Pattern drawing and paintings for decoration.

GROUP 13.—*Machinery and Means of Transport.*

- a* Prime movers, (steam-generators, steam-engines, water-wheels, turbines, pressure-engines, air, wind, and electro-magnetic engines, gas machines:)
- b* Machines for transmitting power, (shafts, wheels, pulleys, cords, bands, etc.:)
- c* Machinery for working special kinds of material, (machines for mining, metallurgy, metal-work, and wood-work; machines for spinning, weaving, knitting, sewing, and embroidering; machines for fulling, cleaning, shearing, dyeing; machines for bleaching, leather-dressing, etc.; machines for paper manufactures and book-binding, for type-founding, printing, lithography, copper-plate printing, color-printing, etc.; machines and apparatus for sugar-making, oil manufacture, breweries, distilleries, stearine, soap, candles, starch, ice-making, match-making; corn mills and agricultural machinery and apparatus:)
- d* Other machinery not belonging to the above mentioned, (blast-engines, fire-engines, pumps, ventilators, etc.:)
- e* Elements and parts of machinery;
- f* Railway machinery, (locomotives, tenders, railway velocipedes and parts of them, railway-carriages and parts composing them, special machinery and apparatus for railway-workshops and railway-contrivances; for making and maintaining railway-plant, snow-ploughs, etc.:)
- g* Steam-gauges, dynamometers, tradimeters, etc.:
- h* All sorts of vehicles not connected with rail;
- i* Statistics of production.

Sections for the Juries.

- Section 1. Prime movers, machines for transmitting power: parts of machinery.
- Section 2. Machines for working special kinds of material, (with the exception of agricultural machines, which are classified in Group II.)
- Section 3. Means of transport and other plant for railways.
- Section 4. Street locomotives, and other kinds of transport.

GROUP 14.—*Philosophical, Surgical Instruments.*

- a* Mathematical, astronomical, physical, and chemical instruments, (instruments for measuring, weighing, and dividing; for optical and electric telegraphy:)
- b* Surgical instruments and apparatus, (artificial limbs, teeth, etc.:)
- c* Horological instruments, clocks, watches, and their parts, (chronoscopes, chronographs, electric clocks:)
- d* Statistics of production.

Sections for the Juries.

- Section 1. Mathematical, astronomical, and physical instruments: chemical apparatus.
- Section 2. Clocks and watches.
- Section 3. Surgical instruments.

GROUP 15.—*Musical Instruments.*

- a* Musical instruments;
 - b* Parts of them, (strings, bows, moulding-boards, membranes, keys, pipes, etc. :)
 - c* Sound-carrying apparatus, (speaking-pipes, signal-whistles, etc. :)
 - d* Bells, chime of bells;
 - e* Statistics of production.
- (Vide Additional Exhibition No. 3.)

Sections for the Juries.

- Section 1. Keyed instruments, (as pianos, organs, harmoniums.)
- Section 2. Stringed instruments, (as harps, guitars, zithers.)
- Section 3. Wind instruments, musical boxes, &c.

GROUP 16.—*The Art of War.*

- a* Organization and recruiting of armies;
- b* Equipment of troops, accoutrements and armor;
- c* Artillery;
- d* Military engineering;
- e* Sanitary contrivances;
- f* Military education, training, and instruction;
- g* Cartography and historiography.

Sections for the Juries.

- Section 1. Equipment of troops.
- Section 2. General armament, artillery, and military engineering.
- Section 3. Sanitary arrangements.
- Section 4. Military education and instruction, cartography and historiography.

GROUP 17.—*The Navy.*

- a* Materials for naval architecture;
- b* Models and drawings of boats and ships for inland lake and river navigation; sea-going ships, coasting vessels, merchant ships, and ships of war, stores and fittings for equipment, outfit, and armament of ships;
- c* Tools and apparatus used in ship-building;
- d* Clothing, outfit, and accommodations for crews;
- e* Land and water-works for navigation,

(models and drawings of docks, harbors, sluices, floating docks, floating batteries, and coast defences;)

- f* Hydrography, charts, meteorological instruments; education of seamen and officers.

Sections for the Juries.

- Section 1. Naval architecture and equipment.
- Section 2. Structures for navigation; hydrography.

GROUP 18.—*Civil Engineering, Public Works, and Architecture.*

- a* Building materials; processes and apparatus for quarrying; brick-making; iron-girder work; preparation and preservation of wood: artificial stone; terra-cotta work, etc.;
- b* Materials and appliances for foundations, (pile-drivers, screw-piles, coffer-dams, caissons, pneumatic and driving apparatus;)
- c* Contrivances and tools for earth-works, (excavators, dredging machines, apparatus for raising, carrying, and transporting earth and materials;)
- d* Materials and apparatus used for roads and railways, (road rollers; railway superstructure, switches, crossings, turn-tables, traversing-

tables, inclined planes, lifts; pneumatic and other modes of propelling; water stations and their apparatus; railway-station buildings of all kinds and systems of railway-signals;)

- e* Hydraulic engineering works, excluding sea-works, (river works, canal works, dikes, locks, dams, etc. :)
- f* Models and plans of viaducts, bridges, and aqueducts, etc.;
- g* Plans, models, and drawings of public buildings, dwelling-houses, barracks, penitentiaries, prisons, and hospitals, schools, and theatres, laborers' cottages; apparatus for lifting and moving heavy weights in buildings, as lifts,

GROUP 18.—Continued.

- etc.; plans and models of cheap dwelling-houses; tools and implements of artisan builders;
- h* Apparatus and inventions for health, comfort, and convenience in buildings, (for lighting, water supply, drainage, water-closets, lightning conductors, etc.);
- i* Agricultural engineering; plans for culture, fencing, draining, farm-buildings, buildings for cattle-breeding, stores, stables, manure-tanks, etc.;
- k* Industrial buildings; spinning mills, weaving mills, grinding mills; distilleries, breweries, sugar manufactories; warehouses, saw-mills, and docks, etc.

Sections for the Juries.

- Section 1. Above ground building.
 Section 2. Hydraulic architecture.
 Section 3. Making of roads and construction railways.

GROUP 19.—*The Private Dwelling-house, its Inner Arrangement and Decoration.*

- a* Models, drawings, and finished buildings, representing dwelling-houses of civilized nations;
- b* Drawings, models, and examples of thoroughly-furnished apartments.

Sections for the Juries.

The private dwelling-house.

GROUP 20.—*The Farm-house, its Arrangements, Furniture, and Utensils.*

- a* Finished buildings, models and drawings of farm-houses of the different nations of the world;
- b* Drawings, models, and examples of peasant rooms, furnished and fitted out with their furniture and apparatus.

Sections for the Juries.

The farm-house.

GROUP 21.—*National Domestic Industry.*

- a* Pottery and porcelain;
- b* Fabrics, tapestry, embroidery, lace and other needle-work;
- c* Metal articles and ornaments;

d Carved work and utensils.

Sections for the Juries.

National domestic industry.

GROUP 22.—*Exhibition Showing the Organization Influence of Museums of Fine Art Applied to Industry.*

- a* The various methods and means by which the different modern Museums, (viz., the South Kensington Museum in London, and the similar museums in Vienna, Berlin, Moscow, etc.,) endeavor to carry out the improvement of the general taste of the people and the manner in which they promote the art industry and public instruction of their countries;

b Exhibition of the objects which have been produced and propagated by these modern museums.

Sections for the Juries.

Representation of the influence of museums on art industry.

GROUP 23.—*Art Applied to Religion.*

- a* Decoration of churches, (wall decoration, stained glass, glass painting, etc.);
- b* Church furniture, (altars, organs, pulpits, pews, shrines for enclosing sacred vessels, etc.);
- c* Ornaments for altars, pulpits, crucifixes, chalices, liburiums, candle-

sticks, altar hangings, and carpets, pulpit-hangings, etc.;

d Objects used in baptism and funerals, etc.

Sections for the Juries.

Ecclesiastical art.

NOTE 1.—The objects exhibited in

GROUP 23.—Continued.

groups 19, 20, 21, 22, and 23 will be judged by special juries formed of members of the juries of those

groups to which the objects, considered from an industrial point of view, belong.

GROUP 24.—*Objects of Fine Arts of the Past, Exhibited by Amateurs and Owners of Collections, (Exposition des Amateurs.)*

a Paintings of ancient masters :

Sections for the Juries.

b Objects d'art. Bronzes, enamels, miniatures, majolicas, porcelain, Faience, etc., etc.

Not subject to the cognizance of a jury.

GROUP 25.—*Fine Arts of the Present Time, works produced since the second London Exhibition of 1862.*

a Architecture, including models, designs, sketches and surveys of architectural works of the present times ;

d Graphic arts, including copper and steel engravings, etching, woodcuts, etc.

b Sculpture, including figures and groups of small sizes : engraving, medals, etc. ;

Sections for the Juries.

c Paintings, including miniatures, and enamels ;

Section 1. Architecture.

Section 2. Sculpture.

Section 3. Painting.

Section 4. Drawing.

GROUP 26.—*Education, Teaching, and Instruction.*

a Education. Exhibition of all the arrangements and contrivances for the better nursing, training, and rearing of children ; their physical and mental development from the earliest days of their life up to school-time ; their nourishment, cradles, nurseries, etc. : child gardens, (kinder-garten.) child games and amusements, child gymnastics :

(2) Middle schools. Comprehending gymnasiums "Real-schulen," or schools wherein exact science and modern languages are taught ;

(3) Professional and technical colleges ;

(4) Universities ;

b Teaching. Exhibition of school-houses and school apparatus in models, drawings, and examples ; exhibition of means of instruction ; the works and journals of instruction ; description and illustrations of methods of instruction ; history and statistics of a school, its organization and laws :

c Instruction in the more limited sense : instruction of adults through literature, the public press, public libraries, and educational societies and associations for instruction.

Sections for the Juries.

Section 1. Plans, organization, means of instruction, and performances of national schools.

Section 2. Middle-class schools.

Section 3. Technical colleges and universities.

Section 4. Auxiliary means for the improvement of adults.

(1) Elementary schools. This department will include apparatus for the instruction of the blind, deaf, dumb, and idiots.

All machinery is contained in Group 13 ; nevertheless, the machines for working special kinds of material will be examined by the Jury of the professional group to which they may belong, with the assistance also of competent machine builders. It is left to the free will of the exhibitor to choose the group in which he wishes his object to be placed, should it be susceptible of being placed in more than one group.

Additional Exhibitions.

1. The history of inventions.
2. The history of industry.
3. Exhibition of musical instruments of Cremona.
4. Exhibition of the use of waste materials and their products.
5. The history of prices.
6. The representation of the commerce and trade of the world.

Temporary Exhibitions.

1. Live animals, (horses, cattle, sheep, pigs, dogs, fowls, game, fish, etc.)
2. Butcher's meat, venison, poultry, lard, etc.
3. Dairy produce.
4. Garden produce, (fresh fruits, fresh vegetables, flowers, plants, etc.)
5. Living plants, injurious to agriculture and forestry.

EXPLANATORY NOTE OF THE FOLLOWING TABLE OF CONTRIBUTORS AND
CONTRIBUTIONS.

The following table, nearly if not quite complete, has been prepared to demonstrate to the eye the comprehensiveness of this great Exposition, well entitled to the name, *Weltaustellung*, though called by some a "failure." But of such a failure, Austria, the Protector, the President, and General Director, need feel no shame. It will abundantly repay the interest on the money expended on it. It was the grandest display of industry of modern times.

Table showing the contributing Countries, and the number of their several Contributions in each group.

COUNTRIES.	Grand Totals.																												
	1. Mining, Metallurgy.	2. Agriculture, Forestry.	3. Chemical Industry.	4. Food Substances.	5. Textiles, Clothing.	6. Leather, Rubber work.	7. Metal Industry.	8. Wood Industry.	9. Glass, Plastic Arts.	10. Fancy Wares.	11. Paper, Stationery.	12. Graphic Art.	13. Machinery.	14. Instruments.	15. Instruments, Musical.	16. Art of War.	17. The Navy.	18. Art of Construction.	19. Dwellings.	20. Farm-houses, &c.	21. Domestic Industries.	22. Museums and Industry.	23. Religious Art.	24. Ancient Art.	25. Modern Art.	26. Educational.	Total.	Collective Exhibits.	
America, U. S. of.....	36	40	40	67	32	27	58	2	19	10	17	32	150	31	7	16	8	14	1	1	4	2	1	1	1	23	640	260	900
Austria	300	1110	493	1339	2512	270	1025	478	412	576	214	512	473	243	186	6	25	309	1517	1	52	1	1	1	1	828	11398	1	11399
Bahamas		1																											
Belgium	20	12	35	31	117	27	37	23	36	2	8	23	53	15	2	12	1	20			2					74	550	1	550
Brazil	11	32	27	93	19	8	4	7	2	1		5	4			1	3	11			4					1	220	...	220
British India.....	15	92	30	63	81	9	65	21	22	82	2	18	13	1	6	1	3	11				4					480	...	480
Cape Good Hope.....	5	5		11	2					1							4									1	33	...	33
Caucasia	3	147	51	1	30		22	4	11	1	1	3			4			4			6						291	...	291
Ceylon							1																			1	1	...	1
Chili		1	1	1	1	1																				1	1	...	1
China	5	26	10	14	24	3	9	9	12	14	12	2	5	2	2	1	2	1	1	2	1					4	164	...	164
Denmark	4	16	22	45	67	14	21	22	19	11	8	37	27	20	6	2	2	1	1	1	114		1	3		12	476	...	476
Egypt	3	12	8	9	10	3		5	7	4	2	5				1	1	1	1	1		4			2	84	1	85	
England	9	46	67	49	132	32	14	26	39	15	16	39	200	28	4	23	11	24		1	5					15	795	56	851
France	101	693	234	497	659	62	178	27	106	59	62	201	259	134	35	12	19	130	59	1	8					564	4100	...	4100
Germany	383	659	431	732	1137	259	747	275	283	398	190	298	615	282	171	39	62	162	13	2	3					226	7367	...	7367
Greece.....	18	87	10	45	69	7	5	5	6	1	3	10	2	1	3	2	4	12			2					4	296	...	296
Guatemala		1	1	1	1	1	1	1																			4	...	4
Hawaii	1	1	1	1	1	1	1	1				1	1				1									1	1	...	1

Holland.....	65	32	65	46	9	22	10	13	3	7	28	8	16	1	7	7	9	8	1	1	1	11	369	369
Hungary.....	127	662	116	660	339	77	71	125	46	31	24	78	114	54	21	13	41	132	25	464	316	3536	3536	
Italy.....	121	384	266	835	485	95	175	178	160	27	69	123	136	121	64	38	111	117	12	220	.....	3737	3737	
Jamaica.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1	
Japan.....	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	.....	20	20	
Mauritius.....	2	.....	6	1	.....	.....	.....	.....	.....	.....	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	2	13	13	
Monaco.....	5	3	1	.....	.....	1	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	12	12	
Morocco.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5	5	
New Zealand.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	3	208	
Norway.....	21	24	8	19	12	5	5	5	2	6	5	5	5	2	2	1	15	1	2	5	.....	7	159	
Persia.....	2	4	.....	2	4	2	3	3	.....	3	.....	4	.....	.....	.....	1	.....	.....	.....	.....	.....	28	28	
Portugal.....	24	3	28	183	83	4	21	14	12	.....	8	1	3	.....	.....	.....	12	.....	17	.....	14	435	435	
Queensland.....	10	4	2	7	2	2	1	.....	.....	.....	.....	1	.....	.....	.....	1	1	.....	.....	.....	.....	31	31	
Roumania.....	34	798	39	110	284	17	9	23	10	14	1	11	6	3	4	3	.....	5	.....	.....	6	1382	1382	
Russia.....	36	173	94	182	184	69	50	30	27	16	32	33	67	35	11	28	22	31	2	33	24	1187	1188	
Salvador.....	1	1	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5	5	
Siam.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1	
Spain.....	254	584	152	522	164	21	29	36	26	16	28	48	7	19	8	21	26	28	1	15	434	2439	2439	
Sweden.....	26	244	61	1	115	33	37	25	10	9	18	25	51	11	8	17	14	17	1	27	249	999	999	
Switzerland.....	9	25	32	71	195	23	82	67	12	13	5	60	84	81	12	11	3	16	14	5	75	897	931	
Trinidad.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1	
Tunis.....	7	60	79	14	197	19	178	36	13	9	.....	.....	.....	.....	9	2	.....	5	1	.....	.....	629	629	
Turkey.....	227	2636	930	701	4185	781	811	375	575	366	99	29	69	35	119	26	10	63	3	356	27	162	12713	
Uruguay.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	61	61	
Venezuela.....	40	137	155	30	.....	1	.....	.....	.....	.....	.....	10	.....	.....	.....	.....	.....	.....	.....	20	.....	393	393	
Victoria.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	101	101	
West Africa.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1	
Additional Exhibition	19	14	10	14	80	5	37	23	21	10	36	.....	18	16	55	.....	21	.....	.....	.....	26	405	405	
Total contributors and contributions)	1874	8867	3468	6425	11271	1882	3725	1866	1900	1642	869	1652	2364	1159	745	286	401	1152	134	61	1371	9	32	68
																						56305	722	57027

1. Exhibition of the utilization of waste material.....44
2. Contribution to the history of prices..... 33
3. The representation of commerce and trade of the world 5
4. The Circle, Oriental Exhibition, with contributors..... 1
5. To the history of prices and trade of the world.....39
6. The pavilion of little children.....36

It was excessively difficult to form an idea of the extent or of the advance of any one of the classified occupations of mankind by the exhibitions here. They were arranged by country, and no common order was followed by all of the countries, so that often it was impossible to find a specimen at all, especially if it was small or not attractive in appearance. The wide severance of similar articles as thus arranged with intervening objects, oftentimes more attractive, rendered it extremely difficult, or nearly impossible, for the reporter to perform his task successfully.

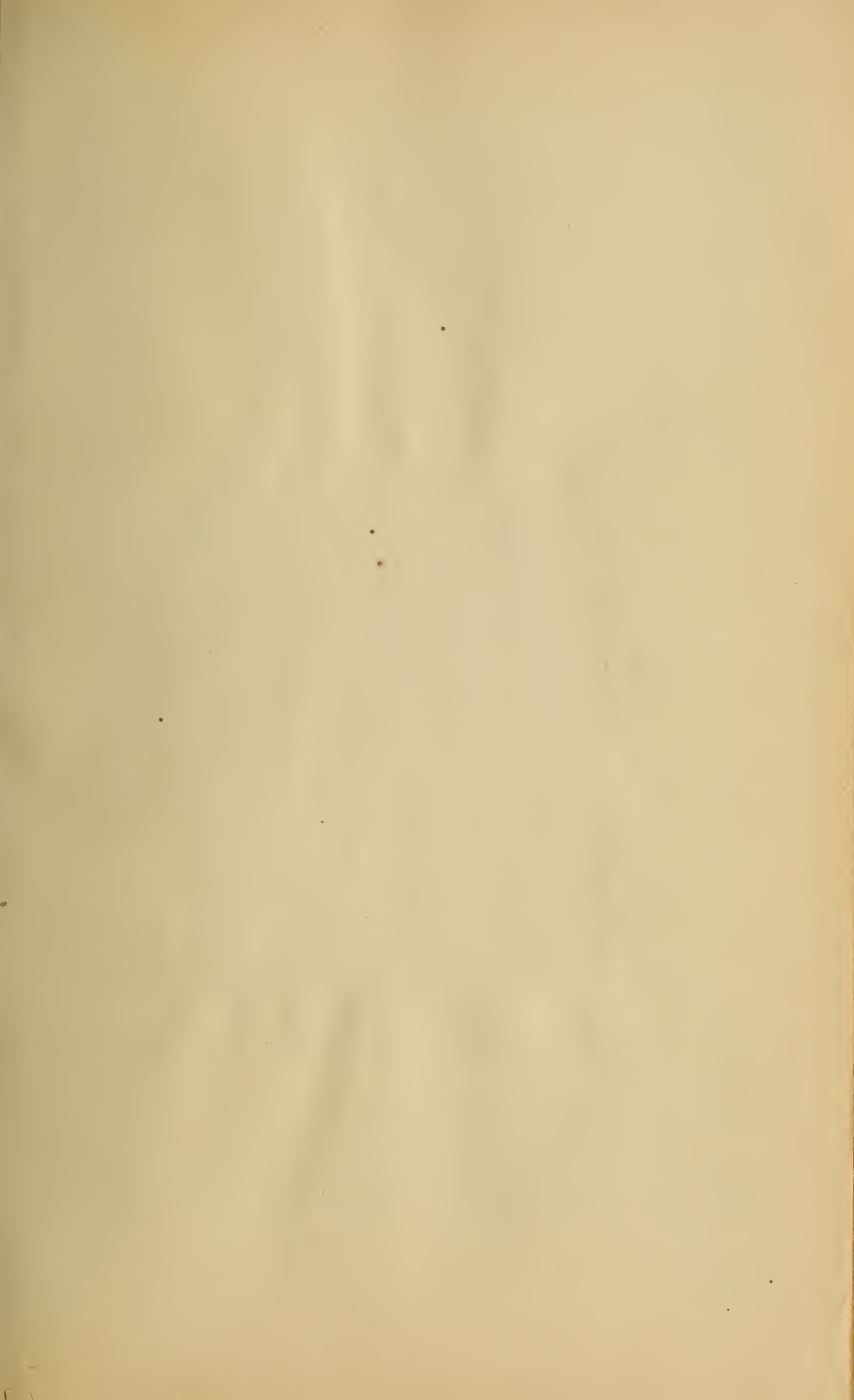
The special building of the Spanish Commissioner, Señor Pascual, to show the *collective industries* of Spain, was a most attractive place, both because well arranged by Señor Perez, of the Madrid Military Museum, and because it gave an insight into the whole of the industries of Spain, in a concise and well-ordered form.

The *metallurgical* display in all parts of the Exhibition was very fine indeed, and impressed the mind with the vast extent of the interest represented, and demonstrated that about the same state of perfection had been attained in this department of production throughout the world. Almost every great country except our own had a fine display of metals, wrought into objects to show their capacity, or twisted to show their power to resist torsion, or otherwise treated to show their various qualities. Our own exhibits were usually of ores and pig, and placed so as to attract but little attention. They were, nevertheless, creditable enough when viewed by a scientist, and came from wide-spread and varied parts of the country.

The mining and metallurgical exhibitions of Germany, Austria, Spain, Italy, Hungary, and Turkey were very extensive, as were also those of France.

The agricultural exhibitions of the same countries were the greatest and finest, but it did not always follow that those countries which had the greatest number of entries had the best display.

The exhibition by Egypt of *food-producing* plants, grains, lentils, agricultural and horticultural products, was, perhaps, the very finest of the kind ever shown. There was a large number of entries of different kinds of grains and lentils, and these had each of them all of their varieties. For instance, there were forty kinds of beans, of all the different grades, shapes, and values as food for man and beast.





No. 13.

This is a view of the interior of an Austrian Agricultural Hall. It will be noticed that Bacchus rules.

The exhibitions of Germany and of Austria were especially fine and systematic; but here again the wide division of classes prevented a close comparison by a general observer, and made it very difficult for the specialist. The show of grains, wood, fibre, and plants was extensive and important, and every observer must have been struck by the French, German, and Austrian shows of *sugar* made from the beet.

In the German department there were vegetables equal in size and beauty to our California mammoth ones. The most noticeable feature of the vegetables, such as beets, carrots, turnips, and potatoes, was their smooth, plump, and regular exterior, with scarcely a depression, elevation, or single irregularity. Grain of the finest appearance, from all parts of the world, was shown in abundance.

In spirits, spirituous liquors, wines, ales, beers, vinegar, preserves, and extracts, a full show was made by nearly every country exhibiting. (See illustration No. 13.)

But especially did the countries contiguous to Austria make a fine exhibition. But queer enough, though the tobacco manufactures were as fine, if not better, than our own, the candies and confectionery, with the single exception of chocolates, were much inferior, even in Austria, where sweets are very much used. Especially in Vienna these preparations were poor indeed.

The crackers, ship-biscuit, and other store breads could be covered by a few samples of very inferior quality, the English being the only meritorious exhibition of the kind. They are not made in Vienna, except in very limited quantities, though in that city large quantities of very sweet cakes are made and sold. The soda cracker, milk and water biscuit, so commonly used throughout the United States, are entirely unknown. The apparatus used in Vienna for the preparation of good bread was certainly successful so far as small white rolls were concerned, the greater part of the bread used in Vienna being of that description.

Several countries exhibited very perfect apparatus for the manufacture of chocolate, which is much used as a beverage and as a confection.

Of *textile fabrics*, woollens of every conceivable kind were shown from wide-spread parts of the world, but they did not strike my eye as superior to our own limited exhibition. In fact, in textile fabrics, aside from the peculiarities of each individual nation, the superiority of the fabrics of one over the other

was of no real moment. Usually, fine specimens, the best that could be made, were shown of all kinds of textile goods, from China, Japan, Turkey, in a word, from the whole world. But the character of the dresses worn by the peasantry from the whole of Turkey and Roumania, Austria, and Hungary, (see illustration No. 14,) as shown on models of life-size, was coarse enough indeed, but perhaps no coarser than all home-made stuffs worn by people of the same grade everywhere, not even excepting our own people and those of England. Notwithstanding the extensive use and general excellence of ready-made clothes in our country, yet as few wretchedly-dressed people are to be seen in Austria, Germany, and France as with us; especially is this true of France. But it does not follow that that country which shows the cheapest and best goods will be best off among its people; because, for example, in England, perhaps I had better say the cities of England, and especially London, ragged and dirty people can be seen everywhere, notwithstanding hers are the best and cheapest goods that are to be seen in the shops of the world.

In carpets and rugs, France, Holland, and England excel. Those from Holland were especially fine, and attracted much attention; but they were no better than our own of the same kinds.

I did not see a display of cotton goods, but in flax most noticeable specimens from several countries were to be seen.

In SILKS, France took the lead. The most elegant and glorious shades of them were to be seen from many manufactories. Every kind of article of the textile industries and of clothing were to be seen, the exhibition of boots and shoes from Austria being very extensive and elegant. Brazil had the finest show of feather ornaments and feather goods, excepting down-quilts, such as were shown by Austrian house-furnishers.

In leather articles, the English, Brazilian, and Austrian specimens were the finest. But in furs Germany showed superiority. India-rubber and gutta-percha goods, of the most extensive and varied kinds, were shown by several countries, though the absence of our elegant rubber boots and shoes was noticeable. An especial pride filled the American observer's breast when looking at the German hard and vulcanized rubber samples, as Goodyear's name and that of our country seemed to be branded typically on every useful and necessary article, indispensable in the arts and trades and pursuits of man.



No. 14.

Interior view of the Transept, filled with the Turkish exhibition. The wares being as handsome and well made as those from any other country, adapted, of course, to the prevailing fashion in that country. The figures of the Peasantry, dressed in their peculiar costumes, were most interesting.

Everywhere, throughout this vast building, could be seen ornaments made of gold, iron, and bronze. Especially attractive were those of gold and those of iron, from all parts of the world; but of bronze products the French had the richest and largest display; magnificent clocks, beautiful figures, splendid vases, chaste and elegant; stair balusters, all ornamented and gilded to the highest degree. Gilt seems to be the height of the Frenchman's idea of elegance, and he has it everywhere and on everything where it would be at all appropriate.

In weapons, for sporting purposes, the English, perhaps, showed the best-made arms, though it would be very difficult to decide between theirs and those shown by French or German makers; yet there was nothing that is not common in the best gun-shops everywhere.

Small ironware articles were shown; but it was evident that nowhere in Europe do they make as nice cast-iron small ware as we do in America. Their stoves, especially those of Austria, Germany, and England, and even of France, were very heavy and clumsy as compared with our beautiful manufactures of that kind, though we had but a sample or two exhibited. But their porcelain and clay heaters were very beautiful, and might perhaps be advantageously imitated in this country. The German, Norwegian, and Austrian exhibition of *enamelled sheet-iron pressed goods* and enamelled cast-iron cooking wares, white and in colors, were most interesting and beautiful, and were suggestive that the application of colored enamels to very many iron articles of daily use would render them more beautiful and cleanly, and would enable us to make of cast-iron many articles that are now made of more perishable material.

In small tools, made of iron, we had some specimens not equalled by any other country. In spades, shovels, and axes we much excel all competitors, not excepting the English, both in finish, beauty, and excellence. Cut tacks, brads, and nails are not made on the continent to any extent, and all of this class of goods is a specialty with us. Iron planes, vices, twist-drills, lathe-chucks, and lathe-dogs were a very few of our American notions not exhibited in kind by any other country.

Austria stood first in *cabinet work*. Her inlaid floors and bent wood furniture were something wonderful, as well as *coopers' work*, including immense casks, beautifully con-

structed kegs and barrels. But our own bucket machinery had no competitor that came under my observation.

The carved wood-work of Italy, Switzerland, Japan, and China occupied the highest rank; but that of Italy was pre-eminent. But in designs for such work, the English stood first. The wood-work industries were well represented from all parts of the world.

In *glass ware*, Austria, England, Italy, Germany, and France all had fine displays. The Italian chandeliers were truly wonderful and beautiful.

The English stood first in style, design, and finish of encaustic tiles for floor and wall; their colors were richer and more elegant than even the Spanish.

The imitation stones of the French were, if possible, more beautiful than the genuine, if we except, perhaps, the diamond. France excelled in terra-cotta statuary, though the Austrian and German specimens of architectural terra-cotta work would be excessively difficult to surpass in either elegance, boldness, or elaborateness of design.

In the manufacture of meerschaum, the Vienna makers showed the greatest perfection of art, and were indignant that the German makers presumed to contest the field. English mother-of-pearl screens and trays were elegant, and were admired perhaps as much as anything shown. They exhibited a great array of umbrellas and whips, and of various leather goods of the best possible construction, but these articles seemed no better than those shown in our shops.

Of toys, the Swiss and German display was overwhelming. Our own scientific and mechanical toys were very noticeable; but it seems to me that they look too permanent and machine-like to fill the child with such bursts of joy as do the old painted toys of the Germans.

Ivory carved elegantly was shown by many nations, but none compared favorably with the German.

In paper, paper-hangings, and papier-maché our own manufactures are quite equal to any I saw exhibited, while our gold pens and pencils were far superior to those of the whole world.

In book-printing, the English and our own stood probably as high even as the elegant work shown by the French. The German and Austrian work that came under notice seemed to me not so good, though some fine specimens were to be seen.

The general printing of no country is as good as our own and the English, not excepting even that of France. The German and Austrian type and printing used in their current books and papers are both bad. In these points we excel all other nations, hardly excepting the English. In lithography, the Germans excelled all; but in chromo-lithography our own articles were the best exhibited, though the Austrian specimens were elegant and beautiful.

Pattern-drawing from some of the Austrian and German schools was quite equal to that from the English and French schools, and was very attractive.

The *machine department*, being separated from all of the multitude of distracting things, stood quite alone as the most attractive place, perhaps most successful exhibition, inasmuch as a clear and distinct idea could be had there, not only of the world's progress in each branch of machinery, but one nation could be easily compared as to general progress on any one branch of machinery with another. The contributions not being always of the same kind of machines, an actual comparison of similar specimens could not be made; but there was no difficulty in comparing the state of the art of construction in each. Our own machine department was the best part of the American exhibition for the same reason; and the arrangement of classes by themselves always gives a satisfaction to the observer not obtained from the general arrangement adopted in all other departments at Vienna.

The exhibition of machinery showed that all of the leading nations of Europe are striving to attain perfection in this department. The American machinery of all kinds, though only sale machinery of the best makers, not made specially to exhibit, so far as I could see as to finish and material bore to the English and continental machinery the same relative merit that the machinery of the best American makers bears to a sort of cheap machinery made by cheap makers to sell in the stores for small prices.

The immense machine-hall, erected of brick, stuccoed, and highly ornamented, with-trussed iron roof lighted by numerous large side windows placed near the roof in the side walls, was a parallelogram 745 yards long by 45 yards wide. It was completely filled with machinery of all kinds, and to have a very valuable report of its contents quite a corps of reporters and draughtsmen would have been required during the whole exhibition. A good report of the exhibition of locomo-

tives alone would have been very valuable, but a herculean task. The exhibition of spinning, embroidering, and all kinds of machines used in textile fabrication, was full and of a very fine order, both in invention and workmanship. The advances made by our inventors could be seen here, for a great many innovations on the old methods were of American parentage, improved or modified to suit the purposes of application.

The manufactures of iron and steel, French, German, English, and Austrian showed the most wonderful results in the manufacture of these metals.

But while examining the wonderful progress made in the manufacture of steel, it should be borne in mind that it was Bessimer who made it possible to make such an enormous ingot as was shown by Krupp, and in model by Russia. Until his method, it was not possible to make such huge masses of steel.

In *philosophical, surgical, mathematical*, and other instruments of that class, astonishing exhibitions were made, excessively low in price, but principally by Austrian and German makers.

In electrical apparatus France and Germany took not only the lead, but really made almost the only show, which was quite extensive and wonderful. The manufacture of musical instruments of perfection seem to be confined to the western nations of Europe and to our own country; that is, to Austria, Germany, Switzerland, France, Italy, and the United States. An additional exhibition of violins and violoncellos, of the old Italian and Tyrolese makers, was held, which I did not see; but its object was to bring to light the points of excellence in the productions of these best makers, so that modern makers may be able to produce as good or better instruments.

The beautiful method of the organization of the jury for this Exhibition is suggestive. They were to be furnished by the exhibitors a brief history and the points of the instruments. This they were to revise and prepare for publication, with illustrations, dimensions, and remarks, so as to utilize the Exhibition. It is thus evident that the originator of this additional exhibition appreciated the fact that a world's fair might be a stepping-stone in the grand advance of man; instead of a place of trade and simple exhibition of what each individual can do.

The pianos of Austria, and of France and Italy, were all

good, and though no better than our own, seemed to me quite as good, both in tone and finish.

France exhibited a novelty or two in stringed instruments, and Switzerland in organs. Austrian and German church organs were very fine indeed, and the only ones on exhibition. The United States cabinet organs were superior to those of the other countries, and were elegant in finish.

The specimens in the group of the art of war, if we except those in the sanitary department, were limited and poor, nor were those shown arranged in such a way as to be of much advantage to other nations. The specimens of Krupp and of Russia were the best, but Krupp's was classified as a metal industry, and he showed nothing new. The exhibition of Switzerland, Italy, Sweden, Norway, and Denmark was noticeable; but the special programme was not followed even by Austria herself, though Hungary made a beautiful exhibition, having grouped upon a platform, an artificial piece of earth, a tableaux of life-size figures of her artillery, infantry, cavalry, engineers, and miners, with their guns, horses, and implements, all very life-like and imposing. In this class especially a connected order of exhibition would have been useful and instructive, chronologically and historically. Roumania made a small show of the same kind, and from the United States were several small-arms, the adopted Springfield gun, and a collection of uniforms from the Schuylkill arsenal. These last did not compare very favorably with the uniforms of the European soldiers on exhibition, either in material or in the manner in which they were made, excepting, perhaps, those from Roumania.

The sanitary service show was very fine, and included everything, from the model of the hospital to the smallest article that could be of benefit. Sanitary cars, freight cars converted into them, stretchers, ambulances, surgeons' cases, and everything conceivable to alleviate pain. France, Austria, and Germany made the bulk of this exhibition, but almost every country in Europe was represented to some extent.

Materials for naval architecture and supplies, especially from the Danube Steam Navigation Company, the Atlantic Steamship Company's Lloyd and Bremen, and from Hungary and Brazil, were of the very finest description, full in detail, and of the most perfect character.

From Italy were exhibited magnificent models of architectural work, and of the Mont Cenis tunnel. But in road-

making, and machines for that purpose, England showed all there was to be seen worthy of note; these were self-propelling, and were provided with rolls, and cranes for lifting.

Devices for promoting comfort and health in dwellings were scattered here and there, so that no very definite idea could be had of them by a general observer like myself. There was an exhibition of drawings, models, and samples of the arrangement and decoration of private dwellings and farm-houses; and although I felt much interested in these subjects, I had not the time necessary to find its scattered parts, and hence saw but little of it.

The apparatus for distilling and brewing exhibited by Germany and Austria, were not as extensive, perhaps, as the use of their products by the whole population, but both were very complete.

The French, English, German, Austrian, and Hungarian pottery shown was beautiful, and in design and color instructive. The exhibitors, however, imparted so little information that the explorer was tempted to secure a sketch, to act as a reminder for after search; but if he proceeded to make it, scarcely five lines could be drawn before he would be stopped by the zealous police, who are as omnipresent in Austria as the press is in America.

The importance of the National Domestic Industry Exhibition was almost lost, because it was so scattered among different nations and other industries, as that, unless an observer had no curiosity whatever, the distracting elements were so great he could not so isolate himself as only to see his object, and it alone, even after he had found it by days and days of patient search. And if our Centennial Exhibition should adopt a similar arrangement of classes, and if the exhibitors fail to make accessible the data relative to the processes of manufacture, historical and statistical, its value will be comparatively small. But if the juries be adequately paid, and it be made their duty to obtain, from the exhibitors, a full and complete description of processes, history, commercial value, &c., as minute as though the chronicler intended to pursue the business himself, and was gaining data therefor, then the country would receive a full equivalent for any sum of money necessary to the success of such an enterprise. If there are secret processes, let the product be entered for special exhibition, but not in competition with the whole world for the grand prizes, which should only be for a full disclosure of



No. 15.

Interior view of two of the rooms devoted to France in the Art Gallery.

all the data touching the business or process. Thus those who would receive the grand prizes would have them for absolute superiority over everything exhibited from the rest of the world. The objection that this makes known the vital secrets of a business will not hold good, for the makers can say, simply, we arrive at a special point by a process known only to ourselves, and in case of patented articles that secret has already been given.

In the Group of Art applied to Religion, though there were but few entries under that special head, there was a good deal to be seen, with some very beautiful specimens of stained glass and altar decorations of bronze, together with carved and gilded wood, with figures in wax and wood, candles, candle-bras, paraphernalia, &c. But these articles did not show any special artistic merit; and in view of the majority of the art and bronze works scattered throughout the churches of Germany, Austria, and France, the progress of the arts would not have suffered had their patronage never been given. (See illustration No. 15.)

The FINE ART exhibition was as eminently successful as such a collection can ever be; and though there were but few specimens of sculpture that will probably become historic—not from want of merit, but from want of historic interest—there were, from Italy, Greece, France, Germany, and Austria, very many fine specimens, evincing in a high degree a wide-spread love of nature and its art imitations. An unprejudiced visitor, wandering through the long galleries of paintings in the art buildings, beholding the works of the old masters and of the new, must say that very many of the latter handle the brush with superior skill and effect, in lights, shades, distances, and expression.

No old master can compare with some of the most modern in color and correct drawing. But in sculpture the impression made upon my mind by works of the old masters was one of superiority as far as mere anatomical figures were concerned, but not so in matters of detail or truthfulness to fact, putting aside the nonsense of a combination of male and female figures.

The paintings and sculptures were drawn from the studios and private collections of Italy, France, Germany, and Austria principally, as well as from England, Switzerland, Holland, Belgium, Hungary, Sweden, Norway, Russia, Denmark, Spain, Portugal, America, and Greece, so that here were to

be seen fine specimens of these arts from the greater part of the civilized world. (See illustration No. 16.)

One of the most gratifying parts of this exhibition was the drawings from the English art schools; the gradual creeping of art in its highest sense into the common course of education, thus permeating all parts of society, elevating, refining and ennobling our aspirations.

The interest displayed by all of the principal exhibiting nations in educational matters by specimens of schools, systems of teaching, books, and philosophical and chemical apparatus, the fifth largest exhibition, could not but inspire great hope for the future of mankind; yet it was like all other classes, except that of machinery, so divided, separated, and scattered as that it was next to impossible even to find the contributions; especially was this true of those who had to rely upon such interpreters as scarcity of funds would allow them to hire, men who spoke the different tongues from some accidental short residence, and to whom scientific terms in either language were as foreign as to the employer, and yet who, from fear of dismissal, pretended to understand all that was said to them, conscious of the employer's inability to better himself.

There were additional exhibitions: The History of Inventions, of Industry, of Musical Instruments, of Waste Material and their Products, of Live Animals, Flowers, Produce, and other temporary things perishable in their nature.

The success of the Exposition was proportioned to its enormous extent, exhibiting, as to my mind it really did, the principal occupations of men throughout the world, shown from almost every stand-point conceivable. No better national school could be than such an exhibition; and I am sure no visitor, alive to the necessities of life and the welfare of his fellow-men, could go into such an exhibition without feeling the narrowness of his previous experience, and gaining new life, light, and vigor in his own peculiar pursuit.

CHARACTER AND CONDITION OF THE AMERICAN EXHIBITION.

These were not so bad as represented by correspondents and by chronic grumblers, who are usually superficial observers; but it was the universal remark of the American visitors that our department was a disgrace to the country and unworthy the name "American." They were all ashamed of the untidy manner of it and of its management, as well they might have



No. 16.

Interior view of one of the chambers in the Art Building, showing in the front a piece of sculpture from the "Deutsches Reich," and in the background one from France, as well as a view through a door leading to an art room devoted to France. The figures on the floor were marks of water used to lay the dust.

been. But although it was not so extensive, perhaps, as it should have been, yet in some respects it did great credit to the country. The articles put on exhibition, with very few exceptions, were indeed no better than those everywhere to be found in the American shops. I took special pains to compare our work with that of all other countries, and in a majority of cases I found it superior.

It is true, I am sorry to say, that the American exhibitors had to bear unaided the expense of putting their goods on exhibition, and to take care of them while there. They were compelled to pay for the space occupied by their goods—a shame to the American Commission, in view of its instructions. Our exhibitors were compelled to erect the stands and to bring their own cases in which to exhibit their goods; and notwithstanding this state of things could be said, in a great measure, of all the Commissions, nevertheless it was a shame to the American Commission, because Congress had provided otherwise. No matter who was Commissioner, or at what period the goods came to be exhibited, early or late, there never was a bureau through which information of any kind could be had, even as to how or where to get a case made, or how to get their goods from custom-house or railway—no small difficulty for those not conversant with the language, and who could not employ competent persons for want of knowing whom to employ. And thus our exhibitors were often compelled to borrow, from the British Commission, carpenters and laborers to do their work. Exhibitors complained that there never was a plan for placing the goods, and this notwithstanding we had a paid architect. In fact there never were laborers enough, so that the members of the Artisan and Scientific Committee, assisted by a few honorary commissioners, felt compelled to pull off their coats and unpack the goods and put them in place for those exhibitors who, supposing the appropriation of Congress intended to pay for such service, had therefore sent no one to accompany their goods, and had not even appointed a representative. These exhibitors were the majority, and their goods were placed as best these persons could, assisted by money furnished by an exhibitor or two who assumed to represent such goods until they could have authority for so doing, as will be seen by a letter from one of them.

The elegance so noticeable in the French, Swiss, and Italian departments was entirely wanting in that of the United

States. The goods were kept in order entirely at the expense of the exhibitors, who, through their agents, only two or three in number, really performed these functions of the Commission. It was not in my province or authority to ask for explanation of all of this, and my efforts to have it otherwise, repeated at the monthly meeting of the whole Commission, always proved futile.

I make these remarks simply because it comes properly, justly, correctly within my report upon this branch of the Exhibition, and if I neglected to insert them, my report would be deceptive.

The decorations furnished by the American Commission were meagre and cheap. Americans did not complain of the character of the goods put on exhibition, but they always complained, with very few exceptions, of the cheap and untasteful manner in which the goods were exhibited. It is, however, quite wonderful how the goods were put on exhibition as well as they were, for the exhibitors, having acted upon the belief that the United States had appropriated money enough to exhibit them in the very best manner possible without private expense, made no preparation to meet the expense.

Indeed, the money appropriated, in the hands of a judicious manager, was quite sufficient to have exhibited the goods more magnificently than those of any other nation. With a few hundred dollars at best, it was quite wonderful what a show the self-constituted exhibitors made of the goods they represented, or assumed to represent, in the absence of authority and of the contributors. If there had been, as there never was, an organized head through which the American goods might have been systematically arranged and placed in position, our department would have been quite as creditable as that of any nation. Our goods were of excellent quality, and almost always of useful things. Everything with us usually assumes some practical form, with little of ornament alone, but enough embellished to please the eye, even as much as the elaborate ornamentation of the French. Our sewing-machines, for example, were of the first workmanship, and although some of the European-made compared quite favorably in many points of excellence of manufacture, yet none of them showed such elegant and beautiful machines, forming such artistic and pleasant ornaments for the chamber, which they are intended to adorn. So far as I could

observe, this feature of American machines is distinctive. I learned from American makers that, notwithstanding their prices are higher considerably than those of European makers, yet they are selling readily to European clothing-manufacturers, because, they say, the American machines are better made, and will stand the wear and tear of constant usage. There were very few American exhibitors present in any department, but the sewing-machines were all represented, and in the machinery department there were a few others; but the mass of things on exhibition were gratuitously represented by gentlemen present, who undertook the service for the honor of the absent owners or of the country.

There were also but few exhibitors regularly present from many other countries; consequently, it was often quite impossible to obtain a knowledge of the articles on exhibition. Especially was this true of the American department. There was no excuse for it. There was no reason that we should not always have had at hand some persons in charge to communicate the value, the meaning, and the mechanical worth of every machine and exhibit in his department, and able to give this information in more than one tongue. And I trust that at the Centennial Exhibition there shall be a chief in charge of every division, with subdivisions numerous enough to arrange and minutely catalogue and know everything exhibited. From some reason or other the American goods did not arrive here in such order, or early enough, to be properly catalogued, and many reflections which will be cast both upon the Commissioner and upon the compiler of the catalogue will be unjust. The catalogue should be looked upon with very great leniency, especially in view of the fact that the whole Commission commenced in disorganization.

But what has struck me as most astonishing, is, that the successive Commissions, knowing that all the trouble in this department, as far as exhibitors were concerned, had arisen from the want of organization, should never have taken advantage of the lesson, and organized a clerical force sufficiently large to conduct the business systematically and without further annoyance. When an exhibitor arrived, his goods not having been sent by the Government's ships, but at his own expense, he was usually directed by friends to a private gentleman, Mr. Louis Ritz, of Cincinnati, who spoke both German and English fluently, and who, fortunately for the country, assumed to represent a large number

of exhibitors. On account of his uniform kindness, and popularity with the Austrian officials, he was enabled to do what the Commission could not do—speedily procure the goods from the custom-house or railways where they were in store, and whose officers knew not what to do with them. This gentleman carried about in his pocket and mind almost the whole of the business, and a great many of the exhibitors feel a lasting gratitude to him. There were probably a dozen highly creditable cases, in which goods were displayed in the miscellaneous department.

Our exhibition of ORES and MINERALS, though not large, embraced wide and varied parts of the country; but being comparatively small collections, and not artistically placed on exhibition, did not attract deserved attention. They were creditable to be sure, but in view of what we might have shown, and in comparison to the metal exhibits of Germany and Austria, ours were really insignificant. In fact, if we had had the display of the goods of any tolerably good metal store we would have done ourselves a little credit.

There were a few drawings and maps, but unaccompanied by explanation or statistics of production in German, or even in English.

In view of the Centennial Exhibition I desire to call attention to the most instructive kind of exhibition, and which, if systematically carried out, will be most creditable to the people of this country, and of the greatest importance and interest to the whole world. I speak of the exhibition of the Northern Pacific railway and that of the resources of the State of North Carolina. The Northern Pacific railway showed a very large map of their projected railway from Duluth to the Pacific Ocean. The map was of a very fine order, with beautiful marginal photographic illustrations. It showed the topography, the profile, its elevations, its woods, &c., &c., and was accompanied with statistical information. Coupled with it, were shown cereals and other products of the country. There were in the Exhibition several exhibits of this kind from Europe, but none accompanied with such striking facts so extensive or so beautifully executed. But the finest show of this kind deserving special notice, national in its character and directing minute attention to a limited portion of our great country, was Professor W. C. Keer's map of the State of North Carolina, prepared and put on exhibition at his private expense. It was quite extensive; I should judge 10x20

feet. It showed the physical features of the State, the topography, geology, and mineralogy; its soils; its forests; its natural productions; its agricultural productions; its climate; its remarkable things and places; profiles, photographs, and statistics. All of these features were shown by colors and other conventional means, and at a glance a very perfect idea could be had of the State of North Carolina. The map was accompanied by a collection of its productions, consisting of specimens of the native woods, the most important minerals, and of the chief agricultural products, cotton in plant and bale, rice, tobacco, grain, wine, silk, &c., &c., thus giving a more perfect idea of a limited portion of the earth's surface than was given by any other single contribution in the Exhibition without exception. ✓

If the whole of our States would prepare such maps and submit them to a competent jury of editors to modify, extend, and bring them within the scope of a general plan, and then heliotype and publish them in book form for use in our schools, it would be of greater use as a text-book than any in existence.

It is to be hoped that these samples, not forgetting the exhibition by the Pork-Packing Association of Cincinnati, which illustrated the whole process of the slaughter and preparation of pork, will stand as suggestive precedents, and call out exhibitions at the Centennial of this character; accompanied in every case by careful descriptions, so that we may be able to disseminate much valuable knowledge. Five minutes of careful and well-explained oral teaching, by a good teacher, with such maps, would give a better idea of the geography, geology, and history of our country than could be learned by the careful perusal of a volume of three hundred pages upon the same subject, making a better and more lasting impression upon the pupil. The first expression of every American who chanced to see the map of North Carolina was to say, "I never knew before the character and value of that State." The beautiful feature of trapping the pupil into learning, instead of forcing him, is one of its most attractive merits. ✓ You are fairly caught, before you are aware of it, into learning a lesson in geography, mineralogy, and even of botany, which will never be forgotten.

Our *school exhibition* attracted universal attention, and Dr. Hoyt, of Wisconsin, deserves great credit for his indefatigable

labors in this direction, and in many other efforts to make much of what we had. Notwithstanding the marked attention this exhibition received, I must confess that the school exhibitions of Prussia, of Austria, of Sweden, and, in fact, of every other country making such an exhibition, were quite equal to our own.

The same barbarous school furniture, with hard wooden seats and backs, as shown by us, made with but slight, immaterial changes, were shown by other nations as well as by our own exhibitors. Our little rural school-house was not a discreditable specimen, but other countries showed quite as creditable ones, with as good buildings, and apparently as good a system as that which we have. The building itself was as well constructed as usual for such a purpose, and in consideration of the totally different style of building in Vienna, it is very creditable that it was done so well. For a long time there was no one in the school-house to explain it, and as the people all had an interest in America, everybody went to see the "American Rural School-House." After great endeavor the Commissioner was induced to be so extravagant as to keep an accomplished linguist, Dr. De Frye, there, and, through him, German, French, Spanish, and Italian alike were enabled to learn something of our school system, and that the small building inspected was but a sample of a country school, and by no means one of those buildings of which we are so proud. A more suitable man could not have been found than this polite linguist.

A visit to the American machine department showed a well-organized and discriminating arrangement in our department of the immense machine hall, of which it was as but a drop. We showed the best machinery on exhibition, though it would have required a special judge to have made distinction between the value of the exhibition of our country and that of another in this line. In fact, the exhibition of machinery was so magnificent, and showed so high a degree of civilization, and so much advancement, that it is sheer nonsense for any individual people to arrogate to themselves more than a simple share in this grand march of progress.

The value of liberal protection to inventors showed itself here remarkably, and notwithstanding it is true that any exhibition of an American fair of creditable size will show ten times the number of new inventions shown throughout this whole Exhibition, and although in the American depart-

ment but a limited number of new things was presented, it contained more new matter than was shown by all the rest of the world put together; and yet there was in this Exhibition no collection whatever of what we call Yankee Notions.

Our exhibition was not a discredit to us; we might be well proud of it; we could not, however, be so proud of the management of our affairs, at whatever stage of the Exhibition, for at all times a want of system was apparent which was quite humiliating.

I could specify American machines, but it is unnecessary for me to do so, nor does it come in my province. If Americans mean to hold their present enviable position as manufacturers of machinery, they must continue to manufacture every machine with a view to its exterior elegance, and to excellence of workmanship warranted throughout, because it is perfectly apparent to my mind (and I am told that the advance shown here over every former exhibition of machinery, as made in Europe, is very marked) that the European manufacturers are striving to make as good machines as are made elsewhere, and it will not do for Americans to build cheap machinery to combat these manufacturers. If they do, they will lose their prestige, and retrograde instead of advance.

I am thus particular in enforcing this idea, because I fear that at this present juncture, when American machinery is appreciated so much, and European manufacturers are attempting not only to imitate, but to excel, our makers will make a very great mistake in assuming that Europe must come to America for machinery of the better class because of the rise of prices in England, from whence they heretofore bought a great proportion of this class of productions.

Our machines were superior, each of its kind, to those of any other country, and our new ideas were very much sought for and admired by visitors. Several of our machines exhibited attracted much attention, such as shoe-machinery, continuous spinner, fire-places, puddler, shuttle-thrower, lathes, tire-setter, drops, and wood machinery. These were generally the best of their kinds yet produced by man, and we could therefore be proud of them.

Passing from this department into the agricultural hall of the American department, there was a fine exhibition of agricultural tools of several kinds, and upon examining them care-

fully in all their parts, one noticed that they were well made and generally well designed, with good proportions, pleasing to the eye. The same cannot be said of most of the agricultural machines exhibited in other departments.

It was very apparent that America stands first in this most important branch of machinery. Notwithstanding England made a much greater show than we did, ours was perhaps the more creditable, for it was evident that they as well as other nations had copied our machines very minutely. This could not be told without some previous knowledge of the facts, but the general similarity and in some parts identity would suggest at once that minute copies had been made; but it was apparent to the careful examiner that the American machines were more graceful, lighter, stronger, and better proportioned than any others, excepting where they were identical copies, and even then ours were better made.

Throughout the whole American department everything depended upon the exhibitor as to the knowledge to be obtained of the machinery or the articles on exhibition, and nothing was done by any Commission, as there should have been, to enable those seeking knowledge to derive benefit from the exhibition. But this was not alone true of the American Commission; it was generally true of all.

In the German department there were general agents in charge of the goods, but very often they could only tell the prices and makers, and could give no facts concerning them.

The machine department of our exhibition was the best, principally because we had a paid superintendent who represented some of the machinery under his charge, and all of it was put on exhibition as well as that of any other nation. In most instances, the cases, mountings, and fittings of the stands for our goods were of the shabbiest and cheapest kind, and these really gave the American department the bad name it seems to have obtained, more here at home from the reports of superficial observers than from real causes, for it was creditable enough what there was of it, though a great nation like ours, adored by nearly all foreigners, should have been represented in every art, trade, and industry, so as to draw to us the best mechanics and talent that the cities and schools of Europe afford.

OBSERVATIONS AND DOINGS.

Leaving New York by the Inman steamer *City of Brooklyn* on the 11th of May, 1873, after the usual vicissitudes of a passage across the Atlantic, passing through London, Paris, &c., I arrived at Vienna on the 15th of June, and immediately reported myself to the Commissioner, Mr. Jackson S. Shultz, who had evidently taken the commissionership because, under the circumstances, some one must do so.

I repaired without delay to my own Commission, who had already organized themselves into a committee for business, and had selected Mr. Horsford as chairman, at the suggestion of Mr. Shultz, who, by the instructions, should have been made chairman. There was no accord existing between the two branches of the Commission, the reporting and governing.

For some reason which I could not well see, our chairman carried the whole business of the committee in his pocket, and really ran the committee by his own will, consulting the Commissioner only, relying upon the inexperience of most of the Commission, and their desire to act moderately, modestly, and inoffensively.

The committee had elected a secretary, but had no clerk, linguists, or draughtsmen, and was as poorly organized for duty, all for want of funds, as was the Chief Commissioner's office itself.

The secretary had jury duty, and his own report to make, and was kept quite busy. We could not employ a clerk to keep the record of the meetings, and keep the Department informed of our proceedings; we had no money. We could not employ linguists or draughtsmen, who were absolutely needed if our reports were to be of value. After numerous conferences, we were allowed by Mr. Garretson, the Commissioner succeeding Mr. Shultz, a clerk, and some of us were allowed, as a sort of special favor, an interpreter for a short time. Trying it awhile, but not desiring longer to be *favoured*, I employed my own assistant, and continued to do so during the whole time of my service in Vienna. The Commissioner could never see his way clear to pay this needful help, or to give us our funds, if they were in his possession, and it was out of the question for the committee to do so, so none were ever employed.

I could have used one or two draughtsmen very profitably

during the whole exposition. Our chairman made a sort of summary report, which was sent to the Secretary of State, but, at each repetition, these grew to be so inaccurate, misrepresenting the facts as relating to several members of the committee, that we refused to allow them to be made. Notwithstanding this, the chairman still held the place, it being of service to him to sign his name as such. The committee appointed the jurymen, as often as was possible, from among themselves, though they had enough to do in procuring information for their reports. To obtain the facts requisite for a useful report, it was found necessary to be a member of a jury. This was the only means of seeing what you wished. The mere fact that you were a jurymen gave you permission to inspect the goods of the class to which you were accredited. No other person could see or examine them with needful particularity.

Upon my arrival I found that some one had been appointed juror in the class upon which I had been assigned to report. But, as he did not come to Vienna, I asked to be made juror in his stead, and the appointment was immediately made.

Mr. Samuel Remington, representative of an American contributor to Group XVI, the Art of War, busied himself about the appointment of a juror for that department. Unacquainted with me and ignorant of the rules governing the jury, or wishing their improper application, he sent the Commissioner to me to know whether I would confer with him. I met him in the ante-room of our committee. He wished to know how I stood and would act as juror. Forthwith he wrote a letter to the Commissioner objecting to me as juror upon the ground that I was an inventor of fire-arms, though aware that I was not an exhibitor, but seemingly not aware that there was no competition; that exhibited articles of merit or that had made a progress could have a medal notwithstanding there might be a better article of the kind; that the jury had no discretion in the matter of awards, but were governed entirely by fixed rules. The letter had no weight whatever, for the committee at once saw through it, and did not give it a second consideration.

But, upon examining Group XVI, I found that there had been placed on exhibition, in the name of the United States, a musket, of the most essential device in which I owned a patent. Hence I felt compelled to resign, which I did with great reluctance, because in doing so I practically excluded

myself from the *entrée* to the cases containing arms and all other objects exhibited, and rendered the performance of my duty a work of great labor and annoyance.

Mr. Wood, the representative of the firm of Pratt & Whitney, was appointed in my stead. This young man is well known as an able mechanic, especially versed in the manufacture of fire-arms, and thoroughly conversant with the value of every arm present, and withal a gentleman of unassuming and unexceptionable demeanor. It was with no little difficulty that persons could be found to fill the place of juror, inasmuch as our jurors, unlike those of every other nation, were not paid for their laborious services—laborious, if they did little else than run about and find the objects of their search, scattered as they were. No one was anxious, few could afford, to spend the time and money necessary to a satisfactory performance of the duties of the place.

Having thus, as we thought, properly filled the vacant jurorship, the gentleman who had objected to my holding the place industriously circulated the report that the juror was only a mechanic, without social influence; and thus this worthy young man was placed in a position of positive discomfort and his usefulness essentially impaired, of which he justly complained to me, seeing that he had been made a juror without solicitation or expectation of the honor.

The number of Americans visiting Vienna and remaining long enough to perform jury duty and to report was very small, and it was a matter of no little difficulty to get persons enough to do these duties. As soon as an American arrived with whom an acquaintance could be made, if he had the least qualification in the estimation of a member of our committee, or better, if there was the least probability of his acceptance, he was at once requested to undertake one or the other of these duties.

The Commissioner should not have expected any one to perform such duties without pay. Our committee knew these facts and talked of them, but we were helpless; we could not get money enough to do our own duty. We could get nothing in the shape of salary, although we were the very officials for whose compensation the funds seemed to us to have been appropriated by Congress.

In view of the fact that we had travelled four thousand miles to get to Vienna, and were compelled to remain five and six months, leaving our families at home, at least three

thousand dollars should have been given each of us, and one thousand dollars apiece should have been given some of the Honorary Commissioners who remained there to collect data for reports, and in other service; and if the United States ever send a Commission to another exhibition, it is to be hoped that these errors will be carefully provided against. It did not seem that the Commissioner had the least discretion in these matters, or, in fact, in the expenditure of the money appropriated.

It was impossible, in conformity with the regulations of the State Department, for the members of our committee to prepare and read their reports to each other, because of the extreme difficulty of getting the details necessary to make them in season. In fact, I have not, up to this date, obtained the facts I sought to make my report what I had desired, and so have been compelled to change my plan.

I found, for instance, in the German department, a chart prepared by a leather manufacturer, B. Jacobi, of Weisenfels, Saxony, exhibiting a drawing of a side of leather, upon which was marked all of the parts of a battery harness, so planned as to avoid waste, and so that the requisite strength should be given to each piece. I deemed it of sufficient importance to be included in my report. It was covered all over with figures and directions in German, without a translation of which I could do nothing. I reported it to the Commissioner; he asked me if I thought it important; if so, to get an estimate of the cost of a draughtsman, one who could translate the matter. After much difficulty, I found one who would undertake it, but his charge would be fifteen florins, about seven dollars and fifty cents. I reported it to the Commissioner, and he asked me again if I thought it worth while. I said I did, and he said he would give me an answer. Of course, I never again broached the subject of draughtsman, except that, again and again, it was proposed in the committee, the question being always one of money, of which we had none, and could get none. Our troubles were not, therefore, brought to the light of day after we found that no money could be had.

The members of the Artisan and Scientific Commission labored under great difficulties because of this state of things. If not a jurymen, without the permission of the exhibitor the goods could not be examined, and most often that person was not to be found, not even by representation. Contributors

did not answer letters asking for information. In my own case several dozen letters to all parts of Europe met with three or four responses only, although written in courteous language, but, I am afraid, not always in the best French and German, but the best that was accessible to me at that time.

After the original difficulties in the Commission, of which I know nothing except idle rumor, when the new Commission came in, an architect and engineer were appointed. The latter took charge of the machine department, and, aside from the fact that it was a distinct class, it did great credit to the United States, being cleanly, orderly, and compact, and almost always in motion except on Sundays. It contained the best machinery, by far, in the whole exhibition, and stood pre-eminent evidence that the only way to do such business is to take a practical man, and pay him for his services, and expect the service of him, when the work will be done.

All other parts of our contribution were left to the exhibitors, who did the best they could under the circumstances, being few in number and without means, the contributors having supposed that the Commission would assume the exhibition of the goods. They did the business of the Commissioner. In the words of the instructions to the Commissioner, they furnished their "laborers to keep the departments in order," "linguists for explanation," and all other duties necessary to secure the examination of the goods by the juries.

Leaving out some direct personalities and names, I here insert a letter written to me, at my request, by one of the exhibitors, that will give a better idea how the exhibition commenced than anything that I could say :

VIENNA, *September 18, 1873.*

DEAR SIR: I came to Vienna, early in April, to look after my own and the exhibits of several houses in New York and Cincinnati. There were no goods here for the American Department upon my arrival, except a few cases which had come *via* Hamburg.

The goods from the United States transports began to arrive about the 23d of April. There seemed to be no organized plan for their reception at the exposition building. Cases containing "fine arts," "philosophical instruments," "textile fabrics," &c., were promiscuously unloaded with machinery in the machine-hall.

About this time the Commissioner was deposed, and the seeming disorganization became a complete rout. I had begun to collect together the various boxes of one of the firms I represented, some twenty in number; a part were in the machine-hall, a part in the new court, then building, and others in the main galleries. The in-coming Commission were exceedingly anxious to get

the department in order by May 1, the opening day; but not one of them was able to offer plans, assign space, or assure exhibitors that if it was occupied it should be permanent. One of the many managers asked me to open certain of my cases, as it was proposed to get a few things together to make a sort of an appearance for the opening day. This I did. I also set up a fine show-case and goods; they were all arranged, somewhat after the style of a junk-shop, at the inner end of the galleries.

It was thus that we participated in the opening day of the magnificent exhibition of the world's products. For several days after the opening day the exhibitors groped about, like the Commission, in masterly inactivity. At length they called an exhibitors' meeting, and electing one of our number chairman, an executive committee was formed, and we resolved to go to work, Commission or no Commission.

The temporary Commissioner was called and informed of this step, who informed us that an architect had been appointed, and was busy making out a plan by which space was to be assigned.

After a few days more waiting we found an architect on hand, who was in readiness to mark off space; but he required each exhibitor first to unpack his goods and lay them on the floor before him, when he would devise a plan for their display after his own fancy. Some he arranged in pyramids, some in squares, and others as his taste suited him. Manufacturers, who were able to judge as to the manner and shape in which their goods should be displayed, were entirely ignored; any protest or appeal to the temporary Commissioner was unavailing.

The goods I had unpacked were assigned a wall space, not sufficient to display one-third of them. Thinking it would be a disgrace to the house I represented to display but a small part of the goods they had gone to the expense to send here, I repacked every one of them, and stacked the cases to one side in the galleries, where they stood for a number of days.

About the 20th day of May all the goods from the United States transports had arrived, and it was discovered that our department presented a very naked appearance. I was then told to take all the space I wanted for the goods, and I was asked to spread out some exhibits which I had already completed. This I did cheerfully.

Mr. Shultz had arrived at this time, and finding a number of cases which had no representatives, several, including myself, were told to *take charge of them and display their contents, and any expense we were at in doing so, if not paid by the owner, he (Mr. Shultz) would see that we could hold the goods for payment of expenses.* At that time I employed six men, and upon this assurance from Mr. Shultz I set to work with them, and put in position thirty exhibits, erected tables, draped them, and made as good a display as was possible.

I retained two men and a woman during the entire exhibition to look after and keep them in order, and to explain them to visitors. I have the goods of sixty exhibitors under my charge, and have obtained for them fifty-two medals; most of these medals I claim as due my personal attention before the juries.

Very truly yours,

AN EXHIBITOR.

Very little comment is necessary; this letter shows clearly how the exhibition commenced, with the exception that it did not tell of the services of Mr. Ritz, who attended to the whole of the custom-house duties, such as getting goods out of bond, paying freights, &c., and was equally as industrious with those exhibits which had no representation, having in his employ a good many laborers, and that those of

the United States Artisan and Scientific Committee then present, feeling the state of things, and having no voice, or control of money with which to employ laborers, and seeing that none would be employed, simply pulled off their coats, and unpacked the goods and placed them on exhibition with their own hands.

These discomfitures did not seem to teach or even open the eyes of the Commissioners, for they did not establish a bureau, to which you might apply for assistance, or to aid in placing or in procuring the goods from the custom-house; and, in fact, Commissioner Shultz derided a motion, at a general meeting of the whole Commission, to increase the clerical force of the bureau of the Commission, so as to have a clerk in attendance to receive the mail and assort it, instead of chucking it into an empty "bitters" box at the foot of the stairs leading to two rooms occupied by the Commission architect, to be handled by any and everybody who pleased to do so; and especially another who could speak German, authorized to attend the reception of the goods at the custom-house, and to take them out of bond, without so much trouble to the victimized visitor and exhibitor. It never occurred to these gentlemen that they were "to receive the products on their arrival in Austria and place them on exhibition."

I do not pretend to say that the Commissioners had any money; that I never knew; but I am sure that fifty thousand dollars would have furnished all of the space occupied by the American department more magnificently than any other in the whole exhibition, for the show that *was* made was wholly due to a very few thousand dollars indeed expended by the exhibitors themselves.

The decorations put up by the Commissioners were meagre and cheap daubs, together with a few flags. The Artisan and Scientific Commission should have had their money at their own disposition. If they were not *trustworthy*, they should not have been sent there, and being sent, they should not have been treated like so many school-boys. The expense of living, of travelling, and of many necessary things not anticipated, were incurred by the Reporters to meet the engagements incident to the purpose for which they were sent, and arising from the necessary demands of society. Some of them were placed in very uncomfortable positions indeed, and were compelled to borrow, at high rates or from

friends, to be enabled to get along at all. But few of them were travellers, and were led to believe one thousand dollars was enough. All of this came about in this way:

When one of the Artisan and Scientific Committee arrived in Vienna, four thousand miles from home, he almost invariably found nearly all of his four hundred dollars gone, which had been allowed him by the State Department. By application to the Commissioner he was referred to the Minister, Mr. Jay, who seemed to be the custodian of the funds, and who granted him a further stipend of two hundred dollars, which sum must last him six months, or until he could say he had acquired matter for his report. Out of this two hundred dollars and the little left over of the four hundred dollars, he must take care of wife and children at home, and live in Vienna for six months. After he could conscientiously write the letter required by Messrs. Jay and Garretson, although his instructions required him to remain during the exhibition, he could get four hundred dollars additional to be used up in the homeward trip, evidently deemed necessary to be retained to keep us from becoming beggars on the way home. The proper criticism upon this will occur to every reader. This was not the intention of Congress. They liberally provided two hundred thousand dollars for the Commission, of which fifty thousand was for the Artisan and Scientific subdivision, and has been misappropriated if applied to any other purpose; and it is nothing but just to those who composed that Commission that they should receive an equal division of the appropriation.

Of the \$200,000 appropriated, not more than \$50,000 was to be expended for salaries and expenses of all persons receiving places AUTHORIZED by the resolution; and as the artisan and scientific reporters were the *only persons* AUTHORIZED *to be appointed* by the resolution, to whom \$50,000 was the limit of pay for expenses and salary, it is clear, to me at least, that they have been treated unjustly, and debarred from receiving what Congress had set aside for them, greatly to the prejudice of their reports, and to their discomfiture and loss in attempting to perform their duty, and I hope Congress will find a remedy for this injustice by ordering an equal division of the money among those appointed, in accordance with this resolution, who have performed their duty.

I was obliged to have an interpreter at my private expense all the time, and with him, after I had found a good one, a



No. 17.

THE FRENCH COMMISSION BUILDING.

This building was a contribution of French constructors to the Exhibition. It was fitted, furnished, carpeted, ornamented, and embellished by the various makers of the different articles necessary to complete a modern house, and was done without cost to the Commission, who in turn sold the articles for the contributors.

college student, I found it exceedingly difficult to get the information I desired ; in fact, I have been compelled, from the absolute want of information, to forego the original plan of my report.

The French and English Commissions were well organized, but the want of interpreters in the English and French departments of the Exhibition was keenly felt by all nationalities. The English Commission had but a very small sum of money, but, like the French Commission, they were wide awake, and their exhibits were creditably, tastily, and beautifully shown, making a great contrast with our own contribution. They had enlisted iron-workers in their cause, who erected becoming quarters for their Commissions, as a contribution to the exhibition. They were furnished, carpeted, and fitted with gas and water fixtures by exhibitors, these things constituting, in part, their exhibits, which were, in turn for their use, advertised and sold by the Commissioners. (See illustration No. 17.)

The English department was a most valuable neighbor to the American, from which they borrowed carpenters, tools, catalogues, case-makers, glaziers, &c.

If these matters had been done jointly I should never have observed them ; but I trust, if there shall ever be another exhibition in which we take part, our Commissioner shall not only be authorized to take responsibility, but shall be informed that, as far as he is concerned, there is no Atlantic cable. The omissions of our executive Commission of direct orders of the State Department, clamored for by visitor, exhibitor, and by the Artisan and Scientific Reporters, are not easily forgiven, as they were used by a noisy and servile press of Europe to daily underrate and belittle us, as, day by day, they made it a subject of editorials and communications by correspondents.

The jurors of all nations except our own were better paid than our Commission, and yet no nation was more liberally provided with means than our own. Some of the jurors we named could not serve ; they could not spend either the time or money necessary to remain so long in Vienna ; and thus it was plain that such services could not be expected without at least paying the expenses of the person engaged.

I never would have accepted the commission at home if I had known how we were to be treated. The great want of the Commission was not harmony, for when Mr. Shultz,

and, after, Mr. Garretson took hold, the Commission did not consist of a Commissioner and a great number of assistants, but it became practically one individual, as it should have been from the very first. He was untrammelled and could do as he pleased, as far as his mind was concerned, according to the best of his judgment.

Mr. Garretson was pleasant and kind in his manner and demeanor, and I believe no proper complaint could be made of the Commission on that score.

In my movements through Vienna there were several things observable well worthy of imitation.

The letter-boxes used by the post office were free from several objections which hold against ours; for instance, an outside box made of metal, placed near a store where stamps were sold, was provided with a locket-hinged top; in it was placed a leather bag, which had fastened in its mouth an iron box, which was about one inch deep, and which had an opening corresponding to an opening in the fixed-box. This opening contained a number of little tongues of metal, which could move inward, but not outward.

When the collector came, every two hours during the day to collect the mails, he came in a wagon and took out the leather bag, replacing it by another. Thus the mails were not handled, and great celerity and safety secured. As every tobacconist and grocer throughout the city was a stamp-vender, the post office was a very great convenience indeed. They have no boxes as we have, but everything is delivered by carriers at the residence or place of business of the party addressed. These carriers carry their mail in bags and in open hands, as ours do. The English have improved upon that, and the carrier conveys his mail in a box suspended in front of him, the lid opening outward; it is convenient, cleanly, and safe. There are mailing places at the post office, and a general delivery for those persons whose residences are not known. The telegraph is governmental, and cheap.

The great city of Vienna, with its suburbs, contains nine hundred and one thousand three hundred inhabitants. They live in fifteen thousand buildings, and by a most simple regulation, one that should be put in force in all of our cities, is comparatively free from murders and burglaries; in fact, all crimes. Whenever a person arrives in the city of Vienna it is the duty of the harborer to at once fill out a blank, fur-



OFFICES OF THE ROYAL BRITISH COMMISSION,
WITH EXHIBITORS' READING ROOM IN THE REAR.

nished by the police, giving the arrival, the business, the place from which the visitor came, and, in fact, all information about him. The neglect of this duty is punishable severely, and if wrong information is given a severe penalty is attached. This is placed on file, and is recorded in a book by the police; and it is the duty of the police of the district in which the arrival is announced to see that it is true.

The idea of registry is not inconsistent with republican institutions, because it makes the community self-protecting. At any hour of day or night you might go throughout the great city of Vienna and never be threatened or spoken to; there was, however, another reason for all this, which should be mentioned, namely, that the houses are all very large and are arranged in floors, so that all classes, good and bad, poor or well-to-do, usually occupy the very same building, the lower floor generally being occupied by the poor and the upper ones by those better to do.

I shall mention, in these general observations, several little ideas seen here which usually escape the notice of travellers.

For instance, in wandering through the grounds of the Exhibition, I saw a man sharpening a scythe, so I went to see how he did it.

A little table used as a seat had a small steel anvil fixed on it at one end; on this table, the operator, sitting astride, held the blade of the scythe on the anvil and continuously striking the blade with the hammer, weighing about a pound, he soon thinned and sharpened it without wearing it, and all the time putting it in the finest condition as to temper and cutting qualities.

Turning around, I saw a man watering the lawns. He had a hose, consisting of sections of iron pipe, some ten or twelve in number, say eight feet long, flexibly connected at their ends, placed on wheels, and the pipes were perforated with fine holes, from which, forced by a pumping-engine, a fine spray-like rain issued upon the ground. When the grass had been watered enough at one point, the pipes were transported to a new place by simply drawing it along. Another hose had an ordinary nozzle, with a small, flat, trowel-like attachment, which could be thrown at pleasure partly across the line of the issue of the water, which, striking upon it, was divided into beautiful flat spray. In another direction a man might be seen watering one of the immense old trees,

two feet and a half in diameter. The earth for about two feet from the trunk was dug up a little below the surface of the surrounding ground and thrown up into a little ridge, into which water was turned from a hose. This was generally practised throughout the city of Vienna.

But in the case of some of the horse-chestnut trees, both in the City Park and at the Children's Garden, this was carried so far as to prove disastrous to the trees, causing them to lose their leaves and bloom a second time in October.

Here and there along the walks in the Prater were cast-iron seats with wooden bottoms. The patterns of these seats were made from well-selected natural cherry limbs, with a shape adapted to the purpose, and painted in the light color of such limbs. They were so natural that almost everybody believed them to be genuine rustic chairs. Another device of this kind to prevent pedestrians from overstepping the bounds of the walks was a curved cast-iron piece spanning about sixteen inches, from a pattern made of grape vine, with a knot or two in it, and painted a natural color. These, too, were often mistaken for pieces of vine; they were stuck down into the ground at the edge of the grass, so that one overlapped the other, the whole producing a fine effect. They just presented obstacle enough to prevent overstepping, and did not have the appearance of a fence. They were beautiful.

Another pretty effect was that of rendering a small fountain beautiful by driving it in the finest imaginable spray, instead of a sickly little stream.

The statuary placed about the grounds was of terra-cotta, upon pedestals of the same material; the color was of a most delicate saffron, and they were very beautiful indeed, and were of French manufacture.

Everywhere, the gas fixtures swung from the ceiling, or from brackets, upon universal ball-joints. Thus, standing upon a step, at one point, all of the burners of a compound chandelier could be turned easily to the person to clean or light, and could be moved out of the way if desirable. This little device adds nothing to cost, and is much more convenient and elegant than our mode of hanging chandeliers, though the gas fixtures themselves are twice heavier and not so handsome or elegant in design, or modern in appearance, as our own. The innovation of lighting by electricity has not yet made its appearance in Europe. An outside shop-

window gas-burner, very much used everywhere in Europe, and not much used with us, if at all, may be mentioned. It consists of a box-like reflector, in which an Argand burner is placed. This is hung outside the window by a curved pendant, detachable fixture. The light is reflected from the outside to the inside; thus the goods displayed are free from the ruinous heat of an inside burner; danger from fire, and the unpleasant condensation of moisture upon the glass, are avoided.

In the restaurants and other places about the city a ventilating apparatus of very old date could be seen. It consisted of a flue in the walls, opening into the top of the room, containing a gas-burner within the opening, so that by its rarefaction of the air a draft is created. It is capable of modification into a useful form of ventilator, simply by extending it down near the floor on the same side as the heating apparatus; but for the purpose of clearing restaurants of gases lighter than air, and smoking-rooms of tobacco fumes, nothing much more effectual could be well devised. Our Gougé ventilator is a valuable improvement of this.

Most of the rooms are heated by very large stoves, constructed of earthenware, very similar to that of which the ordinary red clay flower-pots are made. In a press a lump of clay is put into an engraved or carved mould, and the force of the press is brought on so as to squeeze the clay into every part of the mould, the surplus escaping through holes in the mould. This, being covered usually with a white glaze mixture, is put into an oven and baked to a brick, having the outside appearance of beautiful porcelain. These moulded pieces of burnt clay are then put together with cement, so as to form a sort of air-tight fire-box, with flues of different designs. In this box, in ordinary weather, in the morning is made a fire, which will warm it up so that the immense radiating surface, sometimes eight and nine feet high, some two and a half feet square, will easily, gently heat all of the air in contact with it, and this, becoming lighter, soon moves away, being replaced by cold air of the room, thus making a circulation of all the air in the room, heating in the same manner as steam radiators or circulators do, and with great economy, as, with little fire, the great mass of this large heater becomes warm and remains so a long time, heating in turn and circulating all of the air in the room, as well as by radiation, the single fire of the morning,

in ordinary weather, sufficing for the day. In our more southern States, where wood is burned and great heat is not required, these heaters would be advantageous on account of the small cost of the fuel required and the evenness of the heat; and, if adapted to our coal, would be equally effectual in our coldest latitudes. They are beautiful, sometimes, in design, but are fixtures that cannot be easily moved.

Of the same material, and by the similar machines, are made roofing-tiles, much used in Vienna. They are durable and beautiful, and might well be copied. They are fire-proof, and not liable to be broken by sudden cooling.

Iron is not used to such an extent as with us, either wrought or cast, and the iron small-ware castings are not so beautifully made as those seen everywhere with us.

In household furniture they cannot compare favorably with us, and their prices are very high, while designs are ungraceful. The beds are nearly all single, and almost all of the double beds used are made by placing two single ones side by side. They are not at all luxurious, or even comfortable. A most peculiar custom prevails of buttoning the covering-sheet and coverlets together, the coverlets being provided with buttons for the purpose, saving a great deal of time in making up beds, and something in the neatness and cleanliness of the covering.

In the stores, and on exhibition, were all kinds of pressed iron ware, enamelled inside and out, and in colors, which were sold very cheap; a step or two higher than we have arrived in this direction.

The ranges and cooking apparatus were very similar to our own, with the exception that the cast-iron tops and doors were clumsier, and that the sides were made of the enamelled earthenware tiles of which I have already spoken, giving them a very cleanly and neat appearance. They did not require a great deal of fuel; but in the matter of construction of such things we are quite ahead of them.

A very common newspaper file, used everywhere in the restaurants in Vienna, was quite simple and convenient. A square rattan frame, the size of or a little larger than their quarto papers, light and ornamental, provided with a handle, was placed in the central fold of the papers to be filed; over the backs and over one of the canes of the file was slipped a flared-mouthed, slotted brass tube, the length of the side of the file, encircling, say, two-thirds of the side-rib of the file. This was cheap, simple, and useful.

It is the custom everywhere in Vienna for the housemaids to beat and brush the clothing and shoes of the whole household early every morning.

In beating the clothes they have a rack and rattan beater; the latter is made plaited, in the form of a clover leaf, a little larger than one's hand at the beating end, and thence running into a twisted handle; an elastic, serviceable, and useful article, which might well be copied by us, and would be a useful addition to the labor-savers for our housewives.

The manufactures of Vienna, of all kinds, are quite extensive, both in metal, wood, and leather. Meerscham pipes are more extensively made there than elsewhere, and fancy leather goods, such as pocket-books, bags, &c., &c., are very largely made of Russian leather, and it is the great shoe manufactory and mart of an extensive surrounding country. Shoes of renowned quality, excellence, and cheapness. Kid gloves are made very extensively, and are quite equal to those made in Paris in quality and design, and are cheaper.

An English house has a very large agricultural implement factory here, and several very extensive machine-shops and locomotive works are in active work.

The city has grown in sixteen years from fifty thousand to nine hundred and one thousand three hundred inhabitants. It has just had a water supply put in, from a mountain stream, which has such a fall as to force a jet of water through a five-inch pipe one hundred and eighty feet high—the most magnificent fountain in the world.

If the present Government is not molested by other European powers, the Emperor, his officers, and Parliament will speedily make Austria and Hungary able to maintain their integrity against any other power in Europe.

The Emperor is a quiet man, who seems bent on the good of Austria, regardless of personal ends, or of schemes for the acquirement of territory.

The enormous soldiery of Austria seem to be in good train, and to consist of excellent material, though the men appear to be small in stature—probably a result of the fact that the women of Austria do nearly all of the labor in the fields, streets, and elsewhere, being hod-carriers, mortar-mixers, agricultural laborers, &c., &c., the immense armies swallowing up nearly all of the men of the age proper for the industries of modern civilization. They are armed with a gun of excellent points; among others, having the advantage that the

charge of powder and weight of lead is not so enormously large as to weigh down supply trains.

Some of the private carriages are provided with breaks inside of them, which can be used by occupants of the carriage; thus the carriage is absolutely under control of the occupant, and many lives that are every year lost with us by run-away teams could thus be saved.

Other objects of a similar nature were observed, but these are among the most noticeable; and I will bring this General Report of my Observations and doings to a close, to be followed by my special report as soon as possible.

I am, respectfully,

JOE V. MEIGS.

GENERAL REPORT
UPON
THE EXPOSITION
AT
VIENNA.

1873.

BY J. V. MEIGS.

WASHINGTON:
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1873.

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